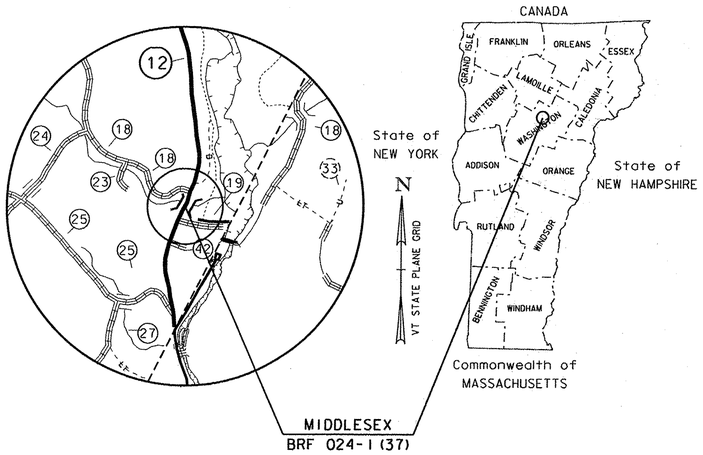
STATE OF VERMONT
AGENCY OF TRANSPORTATION



PROPOSED IMPROVEMENT
BRIDGE PROJECT

TOWN OF MIDDLESEX

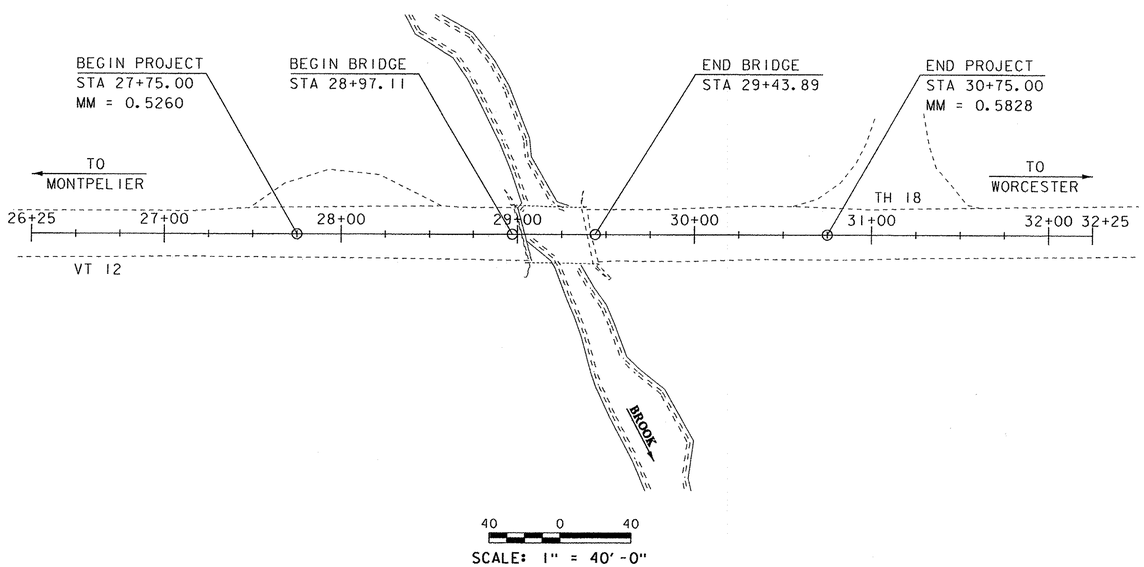
COUNTY OF WASHINGTON

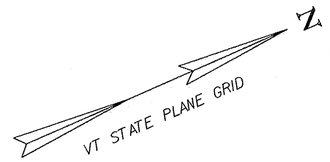
ROUTE NO : VT 12 (RURAL MAJOR COLLECTOR) BRIDGE NO : 77

PROJECT LOCATION : ON VT 12, BEGINNING AT A POINT 0.53 MILES NORTH OF THE MONTPELIER-MIDDLESEX TOWN LINE AND EXTENDING APPROXIMATELY 0.06 MILES IN A NORTHERLY DIRECTION

PROJECT DESCRIPTION : THE PROJECT WILL CONSIST OF THE REPLACEMENT OF THE EXISTING STRUCTURE WITH RELATED APPROACH AND CHANNEL WORK.

LENGTH OF STRUCTURE :	46.78 FEET.
LENGTH OF ROADWAY :	253.22 FEET.
LENGTH OF PROJECT :	300.00 FEET.





RECORD PLANS

CONTRACTOR: A.L. ST. ONGE CONTRACTOR, INC. - MONTGOMERY, VT

RESIDENT ENGINEER: ROBERT SUCKERT

CONSTRUCTION BEGAN: JUNE 26, 2015

CONSTRUCTION COMPLETE: NOVEMBER 16, 2015

RECORD PLANS BY: ROBERT SUCKERT & JESSE IVES

I HEREBY CERTIFY THAT ALL THE CONSTRUCTION REQUIRED BY THIS SET OF DRAWINGS HAS BEEN ACCOMPLISHED AS INDICATED HEREIN.

BY _____ RESIDENT ENGINEER

DATE 5-17-17

NOTE: Any further information concerning final quantities, amounts or other details relative to this project may be found at Central Files in the electronic archives.

CONSTRUCTION IS TO BE CARRIED ON IN ACCORDANCE WITH THESE PLANS AND THE STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2011, AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION ON JULY 20, 2011 FOR USE ON THIS PROJECT, INCLUDING ALL SUBSEQUENT REVISIONS AND SUCH REVISED SPECIFICATIONS AND SPECIAL PROVISIONS AS ARE INCORPORATED IN THESE PLANS.

QUALITY ASSURANCE PROGRAM : LEVEL	2
SURVEYED BY :	R. GILMAN
SURVEYED DATE :	01/10/2011
DATUM	
VERTICAL	NAVD 88
HORIZONTAL	NAD-83 (07)

DIRECTOR OF PROJECT DELIVERY

APPROVED _____ DATE 1/9/2015

PROJECT MANAGER :	CAROLYN CARLSON, P.E.
PROJECT NAME :	MIDDLESEX
PROJECT NUMBER :	BRF 024-1 (37)
SHEET 1 OF 46	SHEETS

STATE OF VERMONT
AGENCY OF TRANSPORTATION

PRELIMINARY INFORMATION SHEET (BRIDGE)

Version 11.06.15

LRFD

INDEX OF SHEETS

PLAN SHEETS

STANDARDS LIST

STRUCTURAL DETAIL SHEETS

SD-501.00	CONCRETE DETAILS AND NOTES	02-09-2012
SD-502.00	CONCRETE DETAILS AND NOTES	10-10-2012
SD-516.10	BRIDGE JOINT ASHPALTIC PLUG	08-29-2011
SD-601.00	STRUCTURAL STEEL PLATE GIRDER DETAILS AND NOTES	06-04-2010
SD-602.00	STRUCTURAL STEEL PLATE GIRDER DETAILS AND NOTES	05-02-2011

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT
2016	3400	420	59	4.4	170
2036	3700	450	59	6.7	280

20 year ESAL for flexible pavement from 2016 to 2036 : 605000

40 year ESAL for flexible pavement from 2016 to 2056 : 1428000

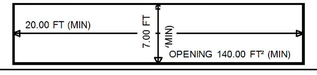
Design Speed : 50 mph

AS BUILT "REBAR" DETAIL

LEVEL I	LEVEL II	LEVEL III
TYPE:	TYPE:	TYPE:
GRADE:	GRADE:	GRADE:

TEMPORARY BRIDGE PROFILE ALONG TEMP CL

BOTTOM OF BEAMS ELEV. = 719.50 FT



FINAL HYDRAULIC REPORT

HYDROLOGIC DATA

Date: June 2014

DRAINAGE AREA : 1.0 sq. mi.
CHARACTER OF TERRAIN : Hilly to mountainous, forested, rural
STREAM CHARACTERISTICS : Steep, alluvial
NATURE OF STREAMBED : Coarse gravel, cobbles, boulders

PEAK FLOW DATA

Q 2.33 =	60 cfs	Q 50 =	240 cfs
Q 10 =	140 cfs	Q 100 =	290 cfs
Q 25 =	200 cfs	Q 500 =	410 cfs

DATE OF FLOOD OF RECORD: Unknown
ESTIMATED DISCHARGE: Unknown
WATER SURFACE ELEV.: Unknown
NATURAL STREAM VELOCITY: @ Q50= 17.7 fps
ICE CONDITIONS : Moderate
DEBRIS: Moderate
DOES THE STREAM REACH MAXIMUM HIGHWATER ELEV. RAPIDLY? Yes
IS ORDINARY RISE RAPID? Yes
IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? No
IF YES, DESCRIBE:

WATERSHED STORAGE: <1% HEADWATERS:
UNIFORM: X
IMMEDIATELY ABOVE SITE:

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE: Single span rolled beam bridge
YEAR BUILT: 1919, Reconstructed in 1981
CLEAR SPAN(NORMAL TO STREAM): 34'
VERTICAL CLEARANCE ABOVE STREAMBED: ~5'
WATERWAY OF FULL OPENING: 92 sq. ft.
DISPOSITION OF STRUCTURE: Replace
TYPE OF MATERIAL UNDER SUBSTRUCTURE: See borings

WATER SURFACE ELEVATIONS AT:

Q2.33 =	718.8'	VELOCITY =	9.9 fps
Q10 =	719.5'	"	12.4 fps
Q25 =	719.9'	"	13.4 fps
Q50 =	720.2'	"	13.9 fps
Q100 =	720.5'	"	14.5 fps

LONG TERM STREAMBED CHANGES: None noted

IS THE ROADWAY OVERTOPPED BELOW Q100: No
FREQUENCY: N/A
RELIEF ELEVATION: 725.1'
DISCHARGE OVER ROAD @Q100: N/A

UPSTREAM STRUCTURE

TOWN: Middlesex DISTANCE: 2250'
HIGHWAY # : TH 23 STRUCTURE #:
CLEAR SPAN: CLEAR HEIGHT:
YEAR BUILT: FULL WATERWAY:
STRUCTURE TYPE: 8' x 6' CMPA

DOWNSTRUCTURE STRUCTURE

TOWN: Middlesex DISTANCE: 700'
HIGHWAY # : STRUCTURE #:
CLEAR SPAN: CLEAR HEIGHT:
YEAR BUILT: FULL WATERWAY:
STRUCTURE TYPE: Wrightsville Reservoir

LRFR LOAD RATING FACTORS

LOADING LEVELS	TRUCK						
	H-20	HL-93	3S2	6 AXLE	3A. STR.	4A. STR.	5A. SEMI
TONNAGE	**20**	**36**	**36**	**66**	**30**	**34.5**	**38**
INVENTORY	1.98	1.19					
POSTING							
OPERATING	2.58	1.55	2.73	1.43	1.9	1.73	2.18
COMMENTS:							

PILE DRIVING AND TESTING REQUIREMENTS

1. NOMINAL PILE DRIVING CAPACITY — Rndr: **432.00 KIP**
2. PILE TEST RESISTANCE FACTOR — ϕ: **0.65**

PROPOSED STRUCTURE

STRUCTURE TYPE: Single Span Rolled Beam Bridge

CLEAR SPAN(NORMAL TO STREAM): 44'
VERTICAL CLEARANCE ABOVE STREAMBED: ~7'
WATERWAY OF FULL OPENING: 175 sq. ft.

WATER SURFACE ELEVATIONS AT:

Q2.33 =	718.8'	VELOCITY=	9.5 fps
Q10 =	719.5'	"	12.1 fps
Q25 =	720.0'	"	13.1 fps
Q50 =	720.2'	"	13.5 fps
Q100 =	720.5'	"	14. 0 fps

IS THE ROADWAY OVERTOPPED BELOW Q100: No
FREQUENCY: N/A
RELIEF ELEVATION: 726.6'
DISCHARGE OVER ROAD @Q100: N/A

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 723.4'
VERTICAL CLEARANCE: @ Q50 = 3.2'

SCOUR: 1' contraction scour at Q100 and Q500

REQUIRED CHANNEL PROTECTION: Stone Fill, Type IV

PERMIT INFORMATION

AVERAGE DAILY FLOW:	2 cfs	DEPTH OR ELEVATION:
ORDINARY LOW WATER:	1 cfs	<0.5'
ORDINARY HIGH WATER:	30 cfs	1'

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: Steel Beam
CLEAR SPAN (NORMAL TO STREAM): 20'
VERTICAL CLEARANCE ABOVE STREAMBED: El. 719.5' minimum
WATERWAY AREA OF FULL OPENING: ~140 sq. ft.

ADDITIONAL INFORMATION

TRAFFIC MAINTENANCE NOTES

1. MAINTAIN TWO-WAY TRAFFIC ON A TEMPORARY BRIDGE.
2. TRAFFIC SIGNALS ARE NOT NECESSARY.
3. SIDEWALKS ARE NOT REQUIRED.
4. THE APPROACHES FOR THE TEMPORARY BRIDGE SHALL BE PAVED.

DESIGN VALUES

1. DESIGN LIVE LOAD		HL-93
2. FUTURE PAVEMENT	d_p:	- - -
3. DESIGN SPAN	L:	45.00 FT
4. MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS)	Δ:	- - -
5. PRESTRESSING STRAND	f_y:	- - -
6. PRESTRESSED CONCRETE STRENGTH	f'_c:	- - -
7. PRESTRESSED CONCRETE RELEASE STRENGTH	f'_{ci}:	- - -
8. CONCRETE, HIGH PERFORMANCE CLASS AA	f'_c:	- - -
9. CONCRETE, HIGH PERFORMANCE CLASS A	f'_c:	4.0 KSI
10. CONCRETE, HIGH PERFORMANCE CLASS B	f'_c:	3.5 KSI
11. CONCRETE, CLASS C	f'_c:	- - -
12. REINFORCING STEEL	f_y:	60 KSI
13. STRUCTURAL STEEL AASHTO M270 (GALVANIZED)	f_y:	50 KSI
14. SOIL UNIT WEIGHT	γ:	0.140 KCF
15. NOMINAL BEARING RESISTANCE OF SOIL	q_n:	4.0 KSF
16. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	ϕ:	0.45
17. NOMINAL BEARING RESISTANCE OF ROCK	q_n:	- - -
18. ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	ϕ:	- - -
19. NOMINAL AXIAL PILE RESISTANCE	q_p:	432.0 KIPS
20. PILE YIELD STRENGTH ASTM A572	f_y:	50 KSI
21. PILE SIZE		HP 12X 84
22. EST. PILE LENGTH ABUTMENT # 1	L_p:	30 FT
23. EST. PILE LENGTH ABUTMENT # 2	L_p:	55 FT
24. PILE RESISTANCE FACTOR	ϕ:	0.65
25. LATERAL PILE DEFLECTION	Δ:	- - -
26. BASIC WIND SPEED	V_{3s}:	- - -
27. MINIMUM GROUND SNOW LOAD	p_g:	- - -
28. SEISMIC DATA — PGA: 15 %g	S_s:	- - -
	S_1:	- - -

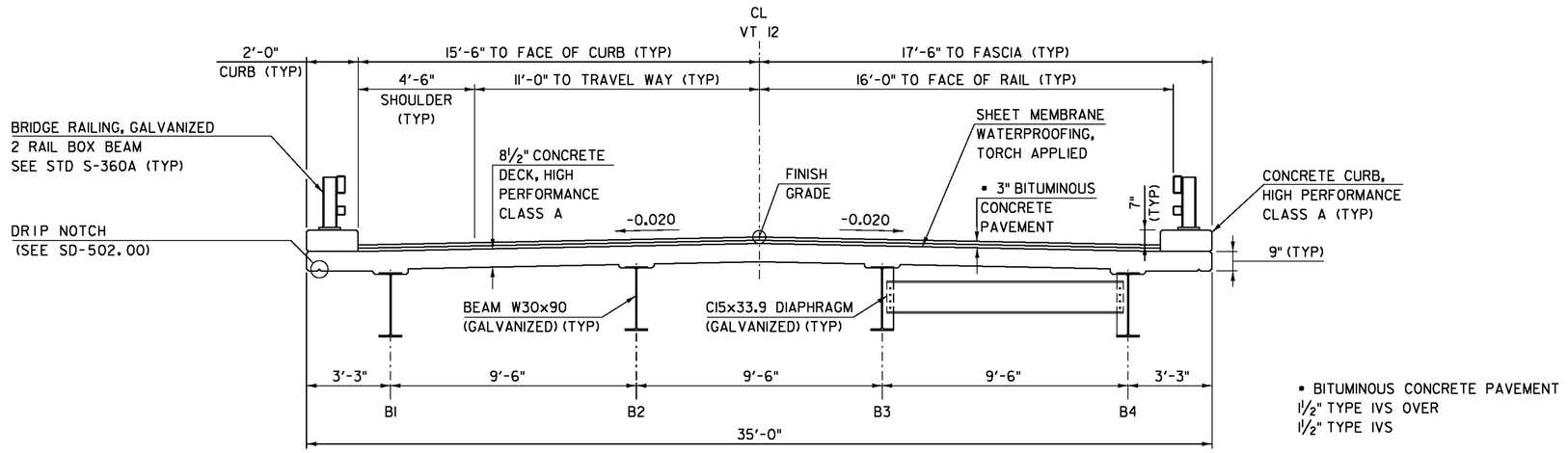
PROJECT NAME: **MIDDLESEX**
PROJECT NUMBER: **BRF 024-1(37)**

FILE NAME: **10c220pi.dgn**
PROJECT LEADER: **C. CARLSON**
DESIGNED BY: **H. SALLS**
PRELIMINARY INFORMATION

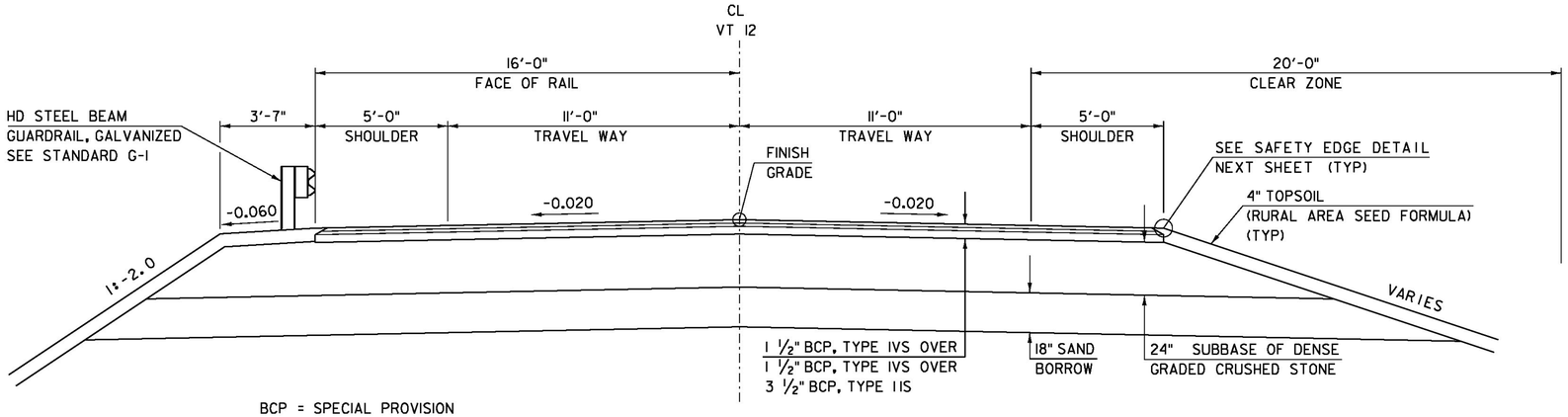
PLOT DATE: 2/6/2015
DRAWN BY: **C. BURRALL**
CHECKED BY: **H. SALLS**

MATERIAL TOLERANCES
(IF USED ON PROJECT)

SURFACE	
- PAVEMENT (TOTAL THICKNESS)	+/- 1/4"
- AGGREGATE SURFACE COURSE	+/- 1/2"
SUBBASE	+/- 1"
SAND BORROW	+/- 1"



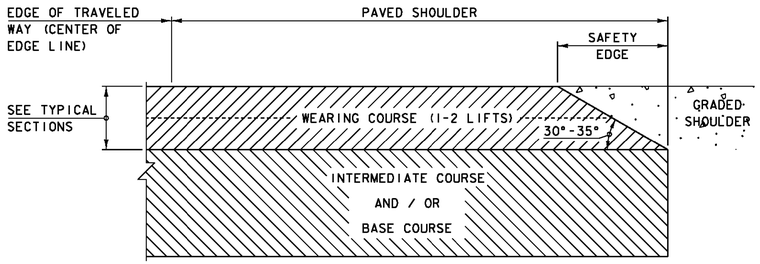
BRIDGE TYPICAL SECTION
SCALE 3/8" = 1'-0"



BCP = SPECIAL PROVISION
(BITUMINOUS CONCRETE
PAVEMENT, SMALL QUANTITY)

ROADWAY TYPICAL SECTION
SCALE 3/8" = 1'-0"

PROJECT NAME:	MIDDLESEX
PROJECT NUMBER:	BRF 024-1(37)
FILE NAME: s10c220typ.dgn	PLOT DATE: 02-FEB-2015
PROJECT LEADER: C. CARLSON	DRAWN BY: R. PELLETT
DESIGNED BY: H. SALLS	CHECKED BY: H. SALLS
TYPICAL SECTIONS 1	SHEET 3 OF 46

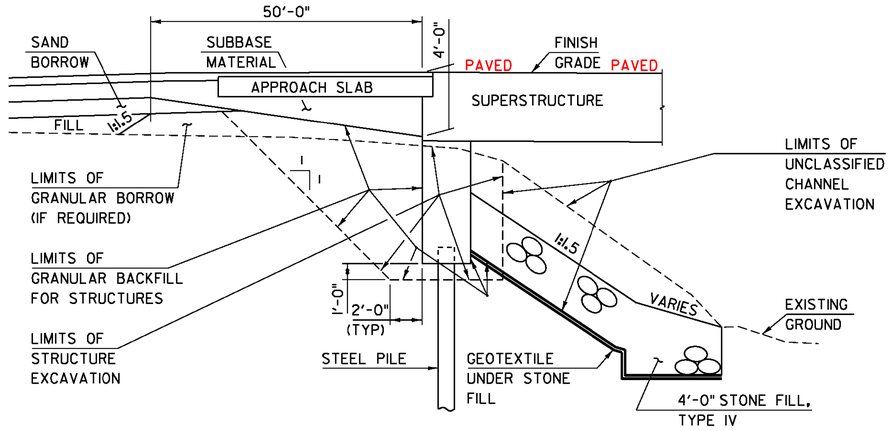


SAFETY EDGE DETAIL

NOT TO SCALE

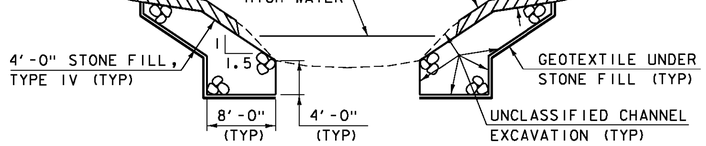
1. THE EDGE OF PAVEMENT SHALL BE FORMED IN SUCH A WAY THAT THE BITUMINOUS CONCRETE PAVEMENT IS EXTRUDED OR COMPRESSED TO FORM THE 30 TO 35 DEGREE ANGLE. DEVICES THAT SIMPLY STRIKE-OFF THE MIX WITHOUT PROVIDING ANY COMPACTION EFFORT WILL NOT BE ALLOWED.

2. THE PAVED SHOULDER EXTENDS FROM THE EDGE OF TRAVELED WAY TO THE EDGE OF THE WEARING COURSE, INCLUDING THE "SAFETY EDGE".



ABUTMENT EARTHWORK TYPICAL SECTION

NOT TO SCALE



TYPICAL CHANNEL SECTION

NOT TO SCALE

*WHENEVER CHANNEL SLOPE INTERSECTS ROADWAY SUBBASE, GRUBBING MATERIAL SHALL BEGIN AT THE BOTTOM OF SUBBASE.

PROJECT NAME:	MIDDLESEX
PROJECT NUMBER:	BRF 024-1(37)
FILE NAME: s10c220typ.dgn	PLOT DATE: 02-FEB-2015
PROJECT LEADER: C. CARLSON	DRAWN BY: R. PELLETT
DESIGNED BY: H. SALLS	CHECKED BY: H. SALLS
TYPICAL SECTIONS 2	SHEET 4 OF 46

GENERAL

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE VERMONT AGENCY OF TRANSPORTATION 2011 STANDARD SPECIFICATIONS FOR CONSTRUCTION, THE 2012 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, AND THEIR LATEST REVISIONS.
2. THE BRIDGE IS DESIGNED FOR HL-93 LIVE LOADING.
3. ALL DIMENSIONS ARE HORIZONTAL OR VERTICAL, AND ARE GIVEN AT 68 DEGREES FAHRENHEIT, UNLESS NOTED OTHERWISE.
4. ITEM 653.50 “BARRIER FENCE” SHALL BE USED TO ESTABLISH A BARRIER AROUND HISTORIC FLOOD PLAQUE AND BOULDER LOCATED AT STA 27+19.87 OFFSET 29.88 FEET RIGHT FROM THE VT12 MAINLINE.
5. THE EXISTING STRUCTURAL STEEL IS PAINTED WITH A MATERIAL THAT MAY CONTAIN LEAD. THE CONTRACTOR SHALL FOLLOW ALL APPLICABLE REGULATIONS WHEN HANDLING AND WORKING WITH THIS STEEL. THE REMOVED STRUCTURAL STEEL IS THE PROPERTY OF THE CONTRACTOR. THE CONTRACTOR SHALL INDEMNIFY AND HOLD THE STATE, ITS OFFICERS, AND EMPLOYEES HARMLESS CONCERNING THE CONTRACTOR'S USE OR DISPOSITION OF THE REMOVED EXISTING STRUCTURAL STEEL.
6. DUE TO STABILITY CONCERNS AT THE ABUTMENTS DURING THE ERECTION OF THE SUPERSTRUCTURE, THE CONTRACTOR SHALL SUBMIT THE ERECTION PLAN A MINIMUM OF 30 WORKING DAYS PRIOR TO ERECTING THE SUPERSTRUCTURE.

EARTHWORK

7. REMOVAL OF THE EXISTING STRUCTURE SHALL BE PAID UNDER ITEM 529.15, “REMOVAL OF STRUCTURE". THIS WORK SHALL INCLUDE REMOVAL OF ANY PORTIONS OF THE EXISTING STRUCTURE THAT FALL OUTSIDE THE LIMITS OF ANY OF THE EXCAVATION ITEMS.
8. EXCAVATION OF SOILS TO THE LIMITS SHOWN ON THE TYPICAL ABUTMENT SECTION SHALL BE PAID FOR UNDER ITEM 204.25, “STRUCTURE EXCAVATION" AND ITEM 203.27, "UNCLASSIFIED CHANNEL EXCAVATION". ANY EXCAVATION OUTSIDE THESE LIMITS, WHICH IS NOT REMOVAL OF STRUCTURE, WILL BE AT THE CONTRACTOR'S EXPENSE.
9. “STONE FILL, TYPE IV” UNDER THE BRIDGE AS SHOWN IN THE PLANS SHALL BE PLACED BEFORE THE SUPERSTRUCTURE IS SET.
10. BACKFILL BEHIND THE ABUTMENTS SHALL NOT BE PLACED HIGHER THAN THE BRIDGE SEATS UNTIL THE ABUTMENTS AND DECK CONSTRUCTION ARE COMPLETED. THE DIFFERENCE IN ELEVATION OF FILL BEHIND THE ABUTMENTS AT ANY TIME DURING BACKFILLING OPERATIONS SHALL NOT EXCEED 2 FEET.
11. THE AREA DISTURBED BY THE TWO-WAY TEMPORARY BRIDGE SHALL BE SEEDED AND MULCHED AFTER ALL THE FILL IS REMOVED TO THE ORIGINAL GROUND SURFACE. THE COST OF THE SEED, FERTILIZER, ETC. WILL BE PAID FOR UNDER THEIR RESPECTIVE BID ITEMS.

CONCRETE AND REINFORCING STEEL

12. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1 INCH BY 1 INCH, UNLESS OTHERWISE NOTED.
13. JOINTS AND SCORE MARKS IN CONCRETE SHALL BE CONSTRUCTED AS INDICATED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
14. ITEM 501.33, “HIGH PERFORMANCE CONCRETE, CLASS A” SHALL BE USED FOR THE DECK, CURBS AND INTEGRAL ABUTMENT CURTAIN WALL AND WING WALLS ABOVE THE PILE CAP CONSTRUCTION JOINT.
15. ITEM 501.34, “HIGH PERFORMANCE CONCRETE, CLASS B” SHALL BE USED FOR APPROACH SLABS AND ALL SUBSTRUCTURE BELOW THE PILE CAP CONSTRUCTION JOINT.
16. ITEM 514.10, "WATER REPELLENT, SILANE", SHALL BE APPLIED TO ALL EXPOSED CONCRETE ON THE BRIDGE SUPERSTRUCTURE, INCLUDING THE CURBS, AND SUBSTRUCTURE, WITH THE EXCEPTION OF THE BOTTOM OF THE DECK BETWEEN THE DRIP NOTCHES.
17. THE TOP SURFACE OF THE PILE CAP SHALL BE GIVEN A FLOAT FINISH TO GRADE. THE CONCRETE WITHIN THE REINFORCING CAGE SHALL BE ROUGHENED BY RAKING PARALLEL TO THE FACE OF THE ABUTMENT TO AN AMPLITUDE OF 1/2 INCH. THE CONCRETE OUTSIDE THE REINFORCING CAGE SHALL REMAIN SMOOTH.
18. ALL REINFORCING STEEL IN THE DECK, CURBS, AND SUBSTRUCTURE ABOVE THE PILE CAP CONSTRUCTION JOINT, INCLUDING WINGWALLS, SHALL MEET THE REQUIREMENTS FOR LEVEL II CORROSION RESISTANCE IN ACCORDANCE WITH SECTION 507. ALL OTHER REINFORCING STEEL SHALL MEET THE REQUIREMENTS FOR LEVEL I CORROSION RESISTANCE. PAYMENT WILL BE MADE UNDER THE APPROPRIATE SECTION 507 CONTRACT ITEM.
19. REINFORCING STEEL PLACEMENT TOLERANCES SHALL BE:
    SPACING: +/- 1 INCH
    CLEARANCE: +/- 1/4 INCH

STRUCTURAL STEEL

20. ALL NEW STRUCTURAL STEEL SHALL CONFORM TO AASHTO M 270M/M 270, GRADE 50 AND SHALL BE PAID FOR UNDER ITEM 506.50 “STRUCTURAL STEEL, ROLLED BEAM (GALVANIZED)”.
21. STRUCTURAL STEEL MEMBERS DESIGNATED “CVN” IN THE PLANS SHALL BE CHARPY V-NOTCH TESTED IN ACCORDANCE WITH SUBSECTION 714.01 OF THE STANDARD SPECIFICATIONS.
22. ALL WELDING SHALL CONFORM TO THE PROVISIONS OF SUBSECTION 506.10.
23. BEAM WEBS AND DIAPHRAGMS SHALL BE PLUMB IN FINAL POSITION.
24. CONNECTIONS NOT SHOWN IN THE PLANS SHALL BE DETAILED BY THE FABRICATOR IN THE FABRICATION DRAWINGS.
25. ALL STRUCTURAL STEEL SHALL BE GALVANIZED IN ACCORDANCE WITH SUBSECTION 726.08.
26. AFTER THE SUPERSTRUCTURE STEEL HAS BEEN ERECTED, ELEVATIONS ALONG THE TOP OF BEAMS SHALL BE TAKEN FOR USE IN DETERMINING THE FINAL GRADE AND HAUNCH DEPTHS.
27. FLEMING BRACKETS OR SIMILAR FALSE WORK, AS REQUIRED BY DESIGN, SHALL HAVE A MAXIMUM SPACING OF 4'-0". THE BRACKETS SHALL BEAR NEAR THE BOTTOM FLANGE AND IN NO CASE SHALL THEY BEAR ABOVE THE BOTTOM QUARTER OF THE WEB. THE DESIGN OF FALSEWORK SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
28. FILL ANY BOLT HOLES IN THE WEBS OF THE BEAMS NOT OTHERWISE FILLED WITH BUTTON HEAD OR HEX HEAD BOLTS MEETING AASHTO M164 TYPE I. TIGHTEN THE BOLTS IN ACCORDANCE WITH SUBSECTION 506.19.

H-PILES

29. TO PREVENT DAMAGE TO THE PILES, PILE SHOES ARE REQUIRED AND SHALL CONFORM TO SUBSECTION 505.04 (f).
30. A MINIMUM OF ONE DYNAMIC PILE TEST, ITEM 505.45 “DYNAMIC PILE LOADING TEST”, SHALL BE CONDUCTED PER ABUTMENT. THE NOMINAL PILE DRIVING RESISTANCE FOR EACH PILE IS 432 KIPS. A PILE RESISTANCE FACTOR OF 0.65 WAS USED BASED ON THE DYNAMIC TESTING REQUIREMENT.
31. THE TOPS OF THE PILES AFTER DRIVING SHALL NOT VARY FROM THE POSITION SHOWN ON THE PLANS BY MORE THAN 3 INCHES. THE PILE ORIENTATION SHALL NOT VARY BY MORE THAN 5 DEGREES. THE CONTRACTOR SHALL DEMONSTRATE TO THE SATISFACTION OF THE ENGINEER HOW THE TOLERANCES WILL BE MET. THESE MEASURES SHALL BE DEMONSTRATED IN A SUBMITTAL TO BE ACCEPTED BEFORE PILE DRIVING COMMENCES.
32. FOR ESTIMATING PURPOSES, THE PILE TIP ELEVATIONS WERE ASSUMED AND ARE SHOWN ON THE BORING LOGS. THE ACTUAL IN PLACE LENGTHS MAY VARY. PILES SHALL HAVE A MINIMUM EMBEDMENT OF 30 FT MEASURED FROM THE BOTTOM OF THE PILE CAP OR BE DRIVEN TO BEDROCK.
33. THE DAM SAFETY ENGINEER OF THE AGENCY OF NATURAL RESOURCES SHALL BE NOTIFIED AT LEAST 5 DAYS PRIOR TO ANY PILE DRIVING ACTIVITY.
    STEVE BUSHMAN: SECTION CHIEF- DAM SAFETY ENGINEER
    (802)-490-6229

TRAFFIC CONTROL

34. TRAFFIC SHALL BE MAINTAINED ON A TWO-WAY TEMPORARY BRIDGE PLACED DOWNSTREAM OF THE EXISTING BRIDGE.
35. THE TEMPORARY BRIDGE APPROACHES SHALL BE PAVED.
36. FULL ACCESS TO ALL SIDE ROADS AND DRIVES WITHIN THE PROJECT LIMITS SHALL BE MAINTAINED AT ALL TIMES. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO ITEM 641.10 “TRAFFIC CONTROL.”
37. ALL SIGNING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MUTCD. WHERE CONFLICTS EXIST BETWEEN THE MUTCD AND THE PLANS, THE MUTCD SHALL GOVERN. FOR ADDITIONAL SIGNING DETAILS AND REQUIREMENTS SEE THE T SERIES OF THE CONTRACT STANDARD DRAWINGS.

PROJECT NAME: MIDDLESEX	
PROJECT NUMBER: BRF 024-1(37)	
FILE NAME: s10c220gen.dgn	PLOT DATE: 06-FEB-2015
PROJECT LEADER: C. CARLSON	DRAWN BY: C. BURRALL
DESIGNED BY: H. SALLS	CHECKED BY: H. SALLS
PROJECT NOTES	SHEET 5 OF 46

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET 1

SUMMARY OF ESTIMATED QUANTITIES

ROADWAY	EROSION CONTROL	BRIDGE	FULL C.E. ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND
1				1		LS	CLEARING AND GRUBBING, INCLUDING INDIVIDUAL TREES AND STUMPS	201.10	
1580				1580		CY	COMMON EXCAVATION	203.15	
		250		250		CY	UNCLASSIFIED CHANNEL EXCAVATION	203.27	
600				600		CY	SAND BORROW	203.31	
1				1		CY	TRENCH EXCAVATION OF EARTH, EXPLORATORY (N.A.B.I.)	204.22	
		580		580		CY	STRUCTURE EXCAVATION	204.25	
		380		380		CY	GRANULAR BACKFILL FOR STRUCTURES	204.30	
530				530		SY	COLD PLANING, BITUMINOUS PAVEMENT	210.10	
1070				1070		CY	SUBBASE OF DENSE GRADED CRUSHED STONE	301.35	
20				20		CY	AGGREGATE SURFACE COURSE	401.10	
9				9		CWT	EMULSIFIED ASPHALT	404.65	
1				1		LU	PRICE ADJUSTMENT, ASPHALT CEMENT (N.A.B.I.)	406.50	
		94		94		CY	CONCRETE, HIGH PERFORMANCE CLASS A	501.33	
		119		119		CY	CONCRETE, HIGH PERFORMANCE CLASS B	501.34	
		1		1		LS	FURNISHING EQUIPMENT FOR DRIVING PILING	504.10	
		340		340		LF	STEEL PILING, HP 12 X 84	505.165	
		2		2		EACH	DYNAMIC PILE LOADING TEST	505.45	
		21800		21800		LB	STRUCTURAL STEEL, ROLLED BEAM (GALVANIZED)	506.50	
		12951		12951		LB	REINFORCING STEEL, LEVEL I	507.11	
		20943		20943		LB	REINFORCING STEEL, LEVEL II	507.12	
		1		1		LS	SHEAR CONNECTORS (352 - 7/8" X 7")	508.15	
		19		19		GAL	WATER REPELLENT, SILANE	514.10	
		68		68		LF	BRIDGE EXPANSION JOINT, ASPHALTIC PLUG	516.10	
		162		162		SY	SHEET MEMBRANE WATERPROOFING, TORCH APPLIED	519.20	
		68		68		LF	JOINT SEALER, HOT POURED	524.11	
		94		94		LF	BRIDGE RAILING, GALVANIZED 2 RAIL BOX BEAM	525.33	
1				1		LS	TWO-WAY TEMPORARY BRIDGE (480 SF - EST.)	528.11	
		1		1		EACH	REMOVAL OF STRUCTURE (1408 SF - EST.)	529.15	
		8		8		EACH	BEARING DEVICE ASSEMBLY, STEEL REINFORCED ELASTOMERIC PAD	531.17	
1				1		TON	DUST AND ICE CONTROL WITH CALCIUM CHLORIDE	609.15	
		230		230		CY	STONE FILL, TYPE IV	613.13	
160				160		LF	CAST-IN-PLACE CONCRETE CURB, TYPE B	616.28	
66				66		LF	HD STEEL BEAM GUARDRAIL, GALVANIZED	621.21	
3				3		EACH	MANUFACTURED TERMINAL SECTION, FLARED	621.50	
1				1		EACH	ANCHOR FOR STEEL BEAM RAIL	621.60	
4				4		EACH	GUARDRAIL APPROACH SECTION, GALVANIZED 2 RAIL BOX BEAM	621.72	
245				245		LF	REMOVAL AND DISPOSAL OF GUARDRAIL	621.80	
100				100		HR	UNIFORMED TRAFFIC OFFICERS	630.10	
800				800		HR	FLAGGERS	630.15	
			1	1		LS	FIELD OFFICE, ENGINEERS	631.10	

DETAILED SUMMARY OF QUANTITIES

QUANTITIES	UNIT	ITEMS
		EARTHWORKS SUMMARY
		FILL AVAILABLE
1106	CY	COMMON EXCAVATION (1580 x .7)
75	CY	UNCLASSIFIED CHANNEL EXCAVATION (250 x 0.3)
174	CY	STRUCTURE EXCAVATION (580 x 0.3)
5	CY	ROUNDING
1360	**CY**	**TOTAL FILL AVAILABLE**
		FILL REQUIRED
138	CY	FACTORED FILL (120 x 1.15)
2	CY	ROUNDING
140	**CY**	**TOTAL FILL REQUIRED**
1220	**CY**	**TOTAL WASTE**
		N.A.B.I. = NOT A BID ITEM

PROJECT NAME: MIDDLESEX
PROJECT NUMBER: BRF 024-1(37)

FILE NAME: s10c220qs.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: H. SALLS
QUANTITY SHEET 1

PLOT DATE: 13-JAN-2015
DRAWN BY: C. BURRALL
CHECKED BY: H. SALLS
SHEET 6 OF 46

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET 2

SUMMARY OF ESTIMATED QUANTITIES				TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES		
ROADWAY	EROSION CONTROL	BRIDGE	FULL C.E. ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS
			1	1		LS	TESTING EQUIPMENT, CONCRETE	631.16				
			1	1		LS	TESTING EQUIPMENT, BITUMINOUS	631.17				N.A.B.I. = NOT A BID ITEM
			3000	3000		DL	FIELD OFFICE TELEPHONE (N.A.B.I.)	631.26				
1				1		LS	MOBILIZATION/DEMOBILIZATION	635.11				
1				1		LS	TRAFFIC CONTROL	641.10				
940				940		LF	4 INCH WHITE LINE	646.20				
910				910		LF	4 INCH YELLOW LINE	646.21				
		210		210		SY	GEOTEXTILE UNDER STONE FILL	649.31				
	175			175		SY	GEOTEXTILE FOR SILT FENCE, WOVEN WIRE REINFORCED	649.515				
	84			84		SY	GEOTEXTILE FOR FILTER CURTAIN	649.61				
	40			40		LB	SEED	651.15				
	30			30		LB	SEED, WINTER RYE	651.17				
	200			200		LB	FERTILIZER	651.18				
	1			1		TON	AGRICULTURAL LIMESTONE	651.20				
	1			1		TON	HAY MULCH	651.25				
	210			210		CY	TOPSOIL	651.35				
	60			60		SY	GRUBBING MATERIAL	651.40				
	1			1		LS	EPSC PLAN	652.10				
	10			10		HR	MONITORING EPSC PLAN	652.20				
	1			1		LU	MAINTENANCE OF EPSC PLAN (N.A.B.I.)	652.30				
	1280			1280		SY	TEMPORARY EROSION MATTING	653.20				
	30			30		CY	VEHICLE TRACKING PAD	653.35				
	24			24		LF	BARRIER FENCE	653.50				
	950			950		LF	PROJECT DEMARCATION FENCE	653.55				
22				22		SF	TRAFFIC SIGNS, TYPE A	675.20				
50				50		LF	SQUARE TUBE SIGN POST AND ANCHOR	675.341				
4				4		EACH	REMOVING SIGNS	675.50				
1				1		LU	PRICE ADJUSTMENT, FUEL (N.A.B.I.)	690.50				
7				7		EACH	SPECIAL PROVISION (CPM SCHEDULE)	900.620				
1				1		LU	SPECIAL PROVISION (MAT DENSITY PAY ADJUSTMENT, SMALL QUANTITY)(N.A.B.I.)	900.650				
1				1		LU	SPECIAL PROVISION (MIXTURE PAY ADJUSTMENT)(N.A.B.I.)	900.650				
550				550		TON	SPECIAL PROVISION (BITUMINOUS CONCRETE PAVEMENT, SMALL QUANTITY)	900.680				

PROJECT NAME: MIDDLESEX
PROJECT NUMBER: BRF 024-1(37)

FILE NAME: s10c220qs.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: H. SALLS
QUANTITY SHEET 2

PLOT DATE: 13-JAN-2015
DRAWN BY: C. BURRALL
CHECKED BY: H. SALLS
SHEET 7 OF 46

STATE OF VERMONT
AGENCY OF TRANSPORTATION

BRIDGE QUANTITY SHEET 1

SUMMARY OF BRIDGE QUANTITIES

SUPERSTRUCTURE	APPROACH SLAB 1	APPROACH SLAB 2	ABUTMENT 1	ABUTMENT 2	TOTALS: BRIDGE TOTAL	UNIT	DESCRIPTIONS: ITEMS	ITEM NUMBER
			108	142	250	CY	UNCLASSIFIED CHANNEL EXCAVATION	203.27
			270	310	580	CY	STRUCTURE EXCAVATION	204.25
			177	203	380	CY	GRANULAR BACKFILL FOR STRUCTURES	204.30
50			22	22	94	CY	CONCRETE, HIGH PERFORMANCE CLASS A	501.33
	29.5	29.5	30	30	119	CY	CONCRETE, HIGH PERFORMANCE CLASS B	501.34
			0.5	0.5	1	LS	FURNISHING EQUIPMENT FOR DRIVING PILING	504.10
			120	220	340	LF	STEEL PILING, HP 12 X 84	505.165
			1	1	2	EACH	DYNAMIC PILE LOADING TEST	505.45
21800					21800	LB	STRUCTURAL STEEL, ROLLED BEAM (GALVANIZED)	506.50
	3661	3556	2890	2844	12951	LB	REINFORCING STEEL, LEVEL I	507.11
14839	137	130	2927	2910	20943	LB	REINFORCING STEEL, LEVEL II	507.12
1					1	LS	SHEAR CONNECTORS (352 - 7/8" X 7")	508.15
7			6	6	19	GAL	WATER REPELLENT, SILANE	514.10
			34	34	68	LF	BRIDGE EXPANSION JOINT, ASPHALTIC PLUG	516.10
			81	81	162	SY	SHEET MEMBRANE WATERPROOFING, TORCH APPLIED	519.20
			34	34	68	LF	JOINT SEALER, HOT POURED	524.11
94					94	LF	BRIDGE RAILING, GALVANIZED 2 RAIL BOX BEAM	525.33
1					1	EACH	REMOVAL OF STRUCTURE (1408 SF - EST.)	529.15
			4	4	8	EACH	BEARING DEVICE ASSEMBLY, STEEL REINFORCED ELASTOMERIC PAD	531.17
			115	115	230	CY	STONE FILL, TYPE IV	613.13
			107	103	210	SY	GEOTEXTILE UNDER STONE FILL	649.31

DETAILED SUMMARY OF QUANTITIES

QUANTITIES	UNIT	ITEMS

PROJECT NAME: MIDDLESEX
PROJECT NUMBER: BRF 024-1(37)

FILE NAME: s10c220qs.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: H. SALLS
BRIDGE QUANTITY SHEET

PLOT DATE: 13-JAN-2015
DRAWN BY: C. BURRALL
CHECKED BY: H. SALLS
SHEET 8 OF 46

GENERAL INFORMATION

SYMBOLOGY LEGEND NOTE

THE SYMBOLOGY ON THIS SHEET IS INTENDED TO COVER STANDARD CONVENTIONAL SYMBOLOGY. THE SYMBOLOGY IS USED FOR EXISTING & PROPOSED FEATURES WITH HEAVIER LINEWEIGHT, IN COMBINATION WITH PROJECT ANNOTATION, AS NOTED ON PROJECT PLAN SHEETS. THIS LEGEND SHEET COVERS THE BASICS. SYMBOLOGY ON PLANS MAY VARY, PLAN ANNOTATIONS AND NOTES SHOULD BE USED TO CLARIFY AS NEEDED.

R.O.W. ABBREVIATIONS (CODES) & SYMBOLS

POINT	CODE	DESCRIPTION
	CH	CHANNEL EASEMENT
	CONST	CONSTRUCTION EASEMENT
	CUL	CULVERT EASEMENT
	D&C	DISCONNECT & CONNECT
	DIT	DITCH EASEMENT
	DR	DRAINAGE EASEMENT
	DRIVE	DRIVEWAY EASEMENT
	EC	EROSION CONTROL
	HWY	HIGHWAY EASEMENT
	I&M	INSTALL & MAINTAIN EASEMENT
	LAND	LANDSCAPE EASEMENT
	R&RES	REMOVE & RESET
	R&REP	REMOVE & REPLACE
	SR	SLOPE RIGHT
	UE	UTILITY EASEMENT
	(P)	PERMANENT EASEMENT
	(T)	TEMPORARY EASEMENT
■	BNDNS	BOUND SET
⊡	BNDNS	BOUND TO BE SET
●	IPNS	IRON PIN SET
◎	IPNS	IRON PIN TO BE SET
⊠	CALC	EXISTING ROW POINT
○	PROW	PROPOSED ROW POINT
[LENGTH]		LENGTH CARRIED ON NEXT SHEET

COMMON TOPOGRAPHIC POINT SYMBOLS

POINT	CODE	DESCRIPTION
	APL	BOUND APPARENT LOCATION
	BM	BENCHMARK
	BND	BOUND
	CB	CATCH BASIN
	COMB	COMBINATION POLE
	DITHR	DROP INLET THROATED DNC
	EL	ELECTRIC POWER POLE
	FPOLE	FLAGPOLE
	GASFIL	GAS FILLER
	GP	GUIDE POST
	GSO	GAS SHUT OFF
	GUY	GUY POLE
	GUYW	GUY WIRE
	GV	GATE VALUE
	H	TREE HARDWOOD
	HCTRL	CONTROL HORIZONTAL
	HVCTRL	CONTROL HORIZ. & VERTICAL
	HYD	HYDRANT
	IP	IRON PIN
	IPIPE	IRON PIPE
	LI	LIGHT - STREET OR YARD
	MB	MAILBOX
	MH	MANHOLE (MH)
	MM	MILE MARKER
	PM	PARKING METER
	PMK	PROJECT MARKER
	POST	POST STONE/WOOD
	RRSIG	RAILROAD SIGNAL
	RRSL	RAILROAD SWITCH LEVER
	S	TREE SOFTWOOD
	SAT	SATELLITE DISH
	SHRUB	SHRUB
	SIGN	SIGN
	STUMP	STUMP
	TEL	TELEPHONE POLE
	TIE	TIE
	TSIGN	SIGN W/DOUBLE POST
	VCTRL	CONTROL VERTICAL
	WELL	WELL
	WSO	WATER SHUT OFF

THESE ARE COMMON VAOT SURVEY POINT SYMBOLS FOR EXISTING FEATURES, ALSO USED FOR PROPOSED FEATURES WITH HEAVIER LINEWEIGHT, IN COMBINATION WITH PROPOSED ANNOTATION.

PROPOSED GEOMETRY CODES

CODE	DESCRIPTION
PC	POINT OF CURVATURE
PI	POINT OF INTERSECTION
CC	CENTER OF CURVE
PT	POINT OF TANGENCY
PCC	POINT OF COMPOUND CURVE
PRC	POINT OF REVERSE CURVE
POB	POINT OF BEGINNING
POE	POINT OF ENDING
STA	STATION PREFIX
AH	AHEAD STATION SUFFIX
BK	BACK STATION SUFFIX
D	CURVE DEGREE OF (100FT)
R	CURVE RADUIS OF
T	CURVE TANGENT LENGTH
L	CURVE LENGTH OF
E	CURVE EXTERNAL DISTANCE

UTILITY SYMBOLOGY

UNDERGROUND UTILITIES

- UGU — UTILITY (GENERIC-UNKNOWN)
- UT — TELEPHONE
- UE — ELECTRIC
- UC — CABLE (TV)
- UEC — ELECTRIC+CABLE
- UET — ELECTRIC+TELEPHONE
- UCT — CABLE+TELEPHONE
- UECT — ELECTRIC+CABLE+TELEP.
- G — GAS LINE
- W — WATER LINE
- S — SANITARY SEWER (SEPTIC)

ABOVE GROUND UTILITIES (AERIAL)

- AGU — UTILITY (GENERIC-UNKNOWN)
- T — TELEPHONE
- E — ELECTRIC
- C — CABLE (TV)
- EC — ELECTRIC+CABLE
- ET — ELECTRIC+TELEPHONE
- AER E&T — ELECTRIC+TELEPHONE
- CT — CABLE+TELEPHONE
- ECT — ELECTRIC+CABLE+TELEP.
- UTILITY POLE GUY WIRE

PROJECT CONSTRUCTION SYMBOLOGY

PROJECT DESIGN & LAYOUT SYMBOLOGY

- CLEAR ZONE (CZ)
- PLAN LAYOUT MATCHLINE

PROJECT CONSTRUCTION FEATURES

- TOP OF CUT SLOPE
- TOE OF FILL SLOPE
- STONE FILL
- BOTTOM OF DITCH ℄
- CULVERT PROPOSED
- STRUCTURE SUBSURFACE
- PROJECT DEMARCATION FENCE (PDF)
- BARRIER FENCE (BF)
- TREE PROTECTION ZONE (TPZ)
- STRIPING LINE REMOVAL
- SHEET PILES

CONVENTIONAL BOUNDARY SYMBOLOGY

BOUNDARY LINES

- TOWN BOUNDARY LINE
- COUNTY BOUNDARY LINE
- STATE BOUNDARY LINE
- PROPOSED STATE R.O.W. (LIMITED ACCESS)
- PROPOSED STATE R.O.W.
- STATE ROW (LIMITED ACCESS)
- STATE ROW
- TOWN ROW
- PERMANENT EASEMENT LINE (P)
- TEMPORARY EASEMENT LINE (T)
- SURVEY LINE
- PROPERTY LINE (P/L)
- SLOPE RIGHTS (SR)
- 6F PROPERTY BOUNDARY
- 4F PROPERTY BOUNDARY
- HAZARDOUS WASTE

EPSC LAYOUT PLAN SYMBOLOGY

EPSC MEASURES

- FILTER CURTAIN
- SILT FENCE
- SILT FENCE WOVEN WIRE
- CHECK DAM
- DISTURBED AREAS REQUIRING RE-VEGETATION
- EROSION MATTING

SEE EPSC DETAIL SHEETS FOR ADDITIONAL SYMBOLOGY

ENVIRONMENTAL RESOURCES

- WETLAND BOUNDARY
- RIPARIAN BUFFER ZONE
- WETLAND BUFFER ZONE
- SOIL TYPE BOUNDARY
- T&E — THREATENED & ENDANGERED SPECIES
- HAZ — HAZ — HAZARDOUS WASTE AREA
- AG — AGRICULTURAL LAND
- HABITAT — FISH & WILDLIFE HABITAT
- FLOOD PLAIN — FLOOD PLAIN
- OHW — ORDINARY HIGH WATER (OHW)
- STORM WATER
- USDA FOREST SERVICE LANDS
- WILDLIFE HABITAT SUIT/CONN

ARCHEOLOGICAL & HISTORIC

- ARCH — ARCHEOLOGICAL BOUNDARY
- HISTORIC DIST — HISTORIC DISTRICT BOUNDARY
- HISTORIC — HISTORIC AREA
- (H) HISTORIC STRUCTURE

CONVENTIONAL TOPOGRAPHIC SYMBOLOGY

EXISTING FEATURES

- ROAD EDGE PAVEMENT
- ROAD EDGE GRAVEL
- DRIVEWAY EDGE
- DITCH
- FOUNDATION
- FENCE (EXISTING)
- FENCE WOOD POST
- FENCE STEEL POST
- GARDEN
- ROAD GUARDRAIL
- RAILROAD TRACKS
- CULVERT (EXISTING)
- STONE WALL
- WALL
- WOOD LINE
- BRUSH LINE
- HEDGE
- BODY OF WATER EDGE
- LEDGE EXPOSED

PROJECT NAME: MIDDLESEX
PROJECT NUMBER: BRF 024-I(37)

FILE NAME: sl0c220legend.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: H. SALLS
CONVENTIONAL SYMBOLOGY LEGEND

PLOT DATE: 13-JAN-2015
DRAWN BY: R. PELLETT
CHECKED BY: H. SALLS
SHEET 9 OF 46

GPS CONTROL POINTS

HVCTRL #1

DAM AZ MK
NORTH = 659959.426
EAST = 1621056.096
ELEV. = 714.466

GENERAL LOCATION, MIDDLESEX, VT.

TO REACH FROM THE INTERSECTION OF US ROUTE 2 (MEMORIAL DRIVE) AND VT ROUTE 12 (MAIN STREET) IN MONTPELIER, GO NORTHEAST ALONG MAIN STREET FOR 0.5 MI (0.8 KM) TO THE INTERSECTION OF SPRING STREET LEFT AT A ROTARY INTERSECTION. TURN LEFT AND GO NORTHWEST ALONG SPRING STREET FOR 0.05 MI (0.1 KM) TO ITS INTERSECTION WITH ELM STREET (VT ROUTE 12). TURN RIGHT AND GO NORTHEAST ALONG VT ROUTE 12 FOR 3.6 MI (5.8 KM) TO THE INTERSECTION OF HORN OF THE MOON ROAD RIGHT. TURN RIGHT AND GO EAST ALONG HORN OF THE MOON ROAD FOR 0.25 MI (0.4 KM) TO THE Y-INTERSECTION OF A DRIVE RIGHT CONTINUING ALONG THE HEIGHT OF THE DAM. BEAR RIGHT AND GO EAST ALONG THE DRIVE FOR ABOUT 40 M (131.2 FT) TO THE SITE OF THE MARK ON THE LEFT, ABOUT 50 M (164.0 FT) WEST OF A CHAIN-LINK FENCE LINE AT THE WEST EDGE OF THE SPILLWAY. THE MARK IS SET FLUSH WITH THE GROUND SURFACE IN THE TOP OF A 0.7 M (2.3 FT) X 0.4 M (1.3 FT) BOULDER. IT IS 4.5 M (14.8 FT) NORTH OF AND ABOUT 0.3 M (1.0 FT) LOWER THAN THE CENTERLINE OF THE DRIVE, 13.4 M (44.0 FT) SOUTH OF THE CENTERLINE OF HORN OF THE MOON ROAD, 5.5 M (18.0 FT) NORTHWEST OF POLE NO L87/R1, 10.5 M (34.4 FT) NORTHEAST OF A STRAIN POLE, 18.2 M (59.7 FT) EAST OF THE WEST END OF A CABLE GUARD RAIL AND 1.2 M (3.9 FT) NORTH OF THE GUARD RAIL.

HVCTRL #2

WRIGHT
NORTH = 664651.890
EAST = 1620232.433
ELEV. = 647.270

GENERAL LOCATION, MIDDLESEX, VT.

TO REACH FROM THE INTERSECTION OF US ROUTE 2 (MEMORIAL DRIVE) AND VT ROUTE 12 (MAIN STREET) IN MONTPELIER, GO NORTHEAST ALONG MAIN STREET FOR 0.5 MI (0.8 KM) TO THE INTERSECTION OF SPRING STREET LEFT AT A ROTARY INTERSECTION. TURN LEFT AND GO NORTHWEST ALONG SPRING STREET FOR 0.05 MI (0.1 KM) TO ITS INTERSECTION WITH ELM STREET (VT ROUTE 12). TURN RIGHT AND GO NORTHEAST ALONG VT ROUTE 12 FOR 4.3 MI (6.9 KM) TO THE INTERSECTION OF THE GATED ENTRANCE DRIVE TO THE WRIGHTSVILLE DAM BOAT LAUNCH RIGHT. TURN RIGHT AND FOLLOW THE DRIVE FOR ABOUT 0.2 MI (0.3 KM) TO THE BOAT LAUNCH RAMP ON THE RIGHT. CONTINUE STRAIGHT AHEAD AND GO NORTH ALONG THE DRIVE (NOW THE ROADBED FOR THE FORMER VT ROUTE 12) FOR ABOUT 75 M (246.1 FT) TO A PARKING AREA AND THE ENTRANCE TO A DIM TRAIL RIGHT. PARK VEHICLE AND WALK EASTERLY ALONG THE TRAIL FOR ABOUT 30 M (98.4 FT) AND THEN SOUTHERLY FOR ANOTHER 30 M (98.4 FT) TO THE SITE OF THE MARK. THE MARK IS SET 15 CM (6 INCHES) BELOW GROUND SURFACE IN THE TOP OF A FENO STYLE MONUMENT. IT IS 31.3 M (102.7 FT) EAST OF AND ABOUT 0.5 M (1.6 FT) LOWER THAN THE CENTERLINE OF THE DRIVE, 27.0 M (88.6 FT) SOUTH OF A 10 CM (4 INCH) WHITE BIRCH WITH TRIANGULAR BLAZE, 18.7 M (61.4 FT) SOUTH-SOUTHWEST OF A 15 CM (6 INCH) SWAMP MAPLE WITH TRIANGULAR BLAZE IN A CLUMP OF FOUR, 15.6 M (51.2 FT) NORTHWEST OF A 50 CM (20 INCH) TWIN-TRUNKED MAPLE NEAR THE WATERS EDGE, 16.2 M (53.1 FT) SOUTH-SOUTHEAST OF A 15 CM (6 INCH) TWIN-TRUNKED APPLE WITH TRIANGULAR BLAZE AND 0.2 M (0.7 FT) WEST OF A FIBERGLASS WITNESS POST.

TRAVERSE TIES

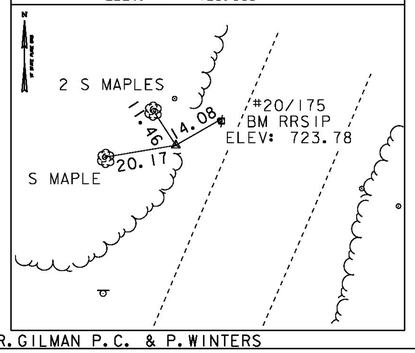
HVCTRL #3

NORTH = 660343.699
EAST = 1619763.487
ELEV. = 728.389

NOT TIED

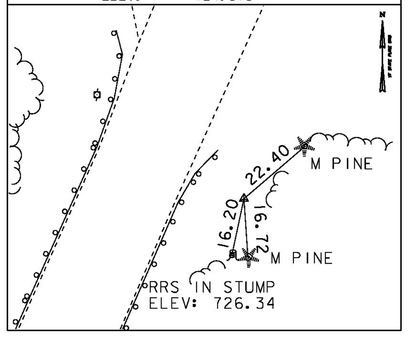
HVCTRL #4

NORTH = 661038.506
EAST = 1620017.348
ELEV. = 725.663



HVCTRL #5

NORTH = 660565.676
EAST = 1619873.812
ELEV. = 724.019



NORTH =
EAST =
ELEV. =

NORTH =
EAST =
ELEV. =

* MAIN TRAVERSE COMPLETED 1/10/2011 BY R.GILMAN P.C. & P.WINTERS

ALIGNMENT TIES

ALIGMENT NAME: VT12PROP

POINT	STATION	NORTHING	EASTING
POB	26+25.00	660490.99	1619808.12
POE	32+25.00	661039.73	1620050.78

DATUM
VERTICAL NAVD 88
HORIZONTAL NAD 83 (07)
ADJUSTMENT COMPASS

PROJECT NAME: MIDDLESEX
PROJECT NUMBER: BRF 024-1(37)

FILE NAME: s10c220tie.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: H. SALLS
TIE SHEET

PLOT DATE: 13-JAN-2015
DRAWN BY: R. BULLOCK
CHECKED BY: H. SALLS
SHEET 10 OF 46

CAST-IN-PLACE CONCRETE CURB, TYPE B
STA 28+60.00 - STA 29+00.00 LT
STA 28+63.00 - STA 29+03.00 RT
STA 29+38.00 - STA 29+78.00 LT
STA 29+50.00 - STA 29+90.00 RT

REMOVAL AND DISPOSAL OF GUARDRAIL
STA 28+37.79 - STA 29+05.13 RT
STA 28+55.75 - STA 28+96.94 LT
STA 29+41.53 - STA 30+06.03 LT
STA 29+46.89 - STA 30+14.07 RT

PAVED APRON
STA 30+70.75 - 31+50.00 LT

HD STEEL BEAM GUARDRAIL, GALVANIZED
STA 28+49.62 - STA 28+61.96 LT
STA 29+67.15 - STA 30+17.15 LT

ANCHOR FOR STEEL BEAM RAIL
STA 28+56.80 LT

MANUFACTURED TERMINAL SECTION, FLARED
STA 28+34.75 - STA 28+73.84 RT
STA 30+17.15 - STA 30+56.28 LT
STA 29+79.01 - STA 30+18.14 RT

GUARDRAIL APPROACH SECTION, GALVANIZED 2 RAIL BOX BEAM
STA 28+61.96 - STA 28+91.29 LT
STA 28+73.84 - STA 29+02.94 RT
STA 29+38.06 - STA 29+67.15 LT
STA 29+49.71 - STA 29+79.01 RT

BRIDGE RAIL, GALVANIZED 2 RAIL BOX BEAM
STA 28+91.29 - STA 29+38.06 LT
STA 29+02.94 - STA 29+49.71 RT

N
VT STATE PLANE GRID

BM ELEV 723.777
RR SPIKE
IN POLE

BEGIN APPROACH
STA 26+75.00

BEGIN PROJECT
STA 27+75.00

BEGIN BRIDGE
STA 28+97.11

END BRIDGE
STA 29+43.89

END PROJECT
STA 30+75.00

SEE SHEET 13 FOR
UTILITY RELOCATION DETAILS

END APPROACH
STA 31+75.00

EXISTING R.O.W.

TH 18

VT 12
TO MONTPELIER

VT 12
TO WORCESTER

N 23°51'20.52" E

S 86°08'39" E

100+00

101+00

102+00

103+00

26+25
27+00
28+00
29+00
30+00
31+00
32+00
32+25

HVCTRL
COMB POLE #17/172
AER E&T
CZ
COMB POLE #17/173
M. LINE
TEL
COMB POLE #17 & #19
COMB POLE #20/175
GUYW
GUYP
S MAPLES 20.46 IS TIE DIST
11.46 IS TIE DIST

BOULDER WITH PLAQUE FLOOD
16.20 TIE DIST TO BM
M PINE
16.72 TIE DIST
M PINE
22.40 TIE DIST
TREE
TEMPORARY SUPPORT

BM ELEV 726.343
RR SPIKE
IN TOP OF STUMP

LIMITS OF TEMPORARY DETOUR

C/L TEMPORARY ALIGNMENT

BROOK

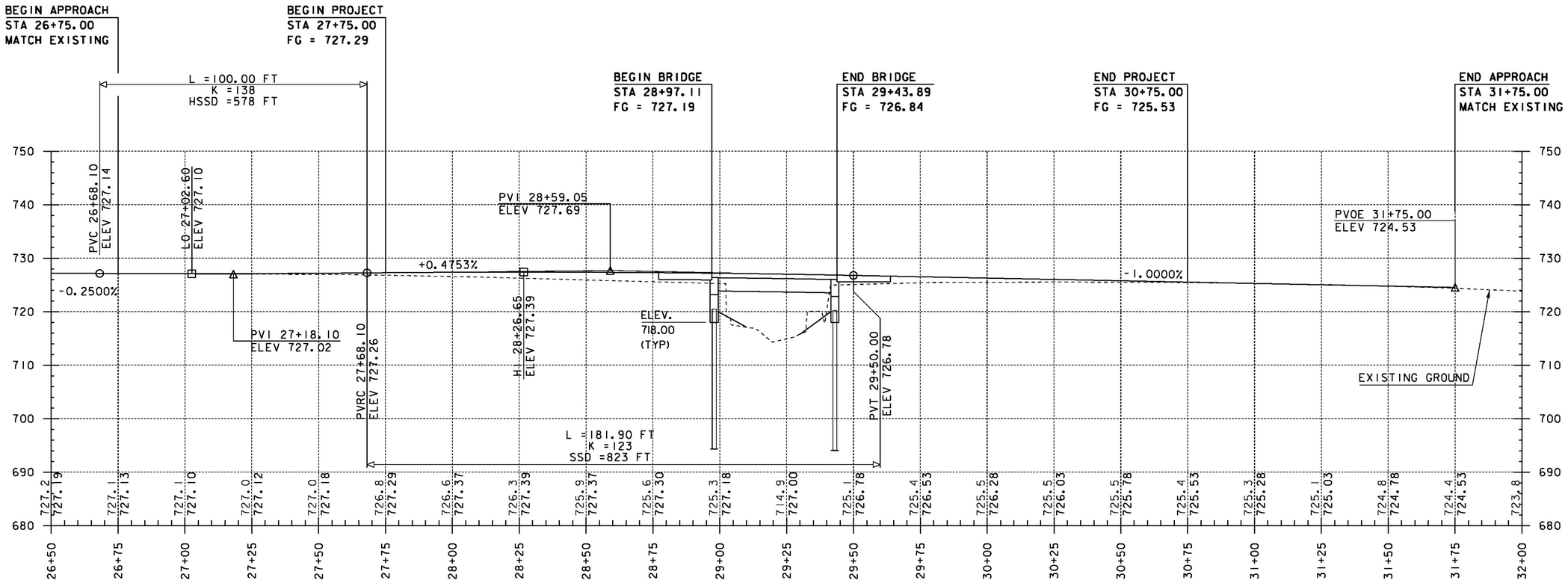
EXISTING BRIDGE DATA
SINGLE SPAN ROLLED BEAM
BUILT - 1919, REHAB 1981
OVERALL LENGTH - 44'-0"
SPAN LENGTH - 42'-0"
CURB - 0'-0"
ROADWAY WIDTH - 27'-0"
OUT TO OUT WIDTH - 31'-5"

SCALE 1" = 20'-0"
20 0 20

PROJECT NAME: MIDDLESEX
PROJECT NUMBER: BRF 024-1(37)

FILE NAME: s10c220bdr.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: H. SALLS
LAYOUT

PLOT DATE: 13-JAN-2015
DRAWN BY: R. PELLETT
CHECKED BY: H. SALLS
SHEET 11 OF 46



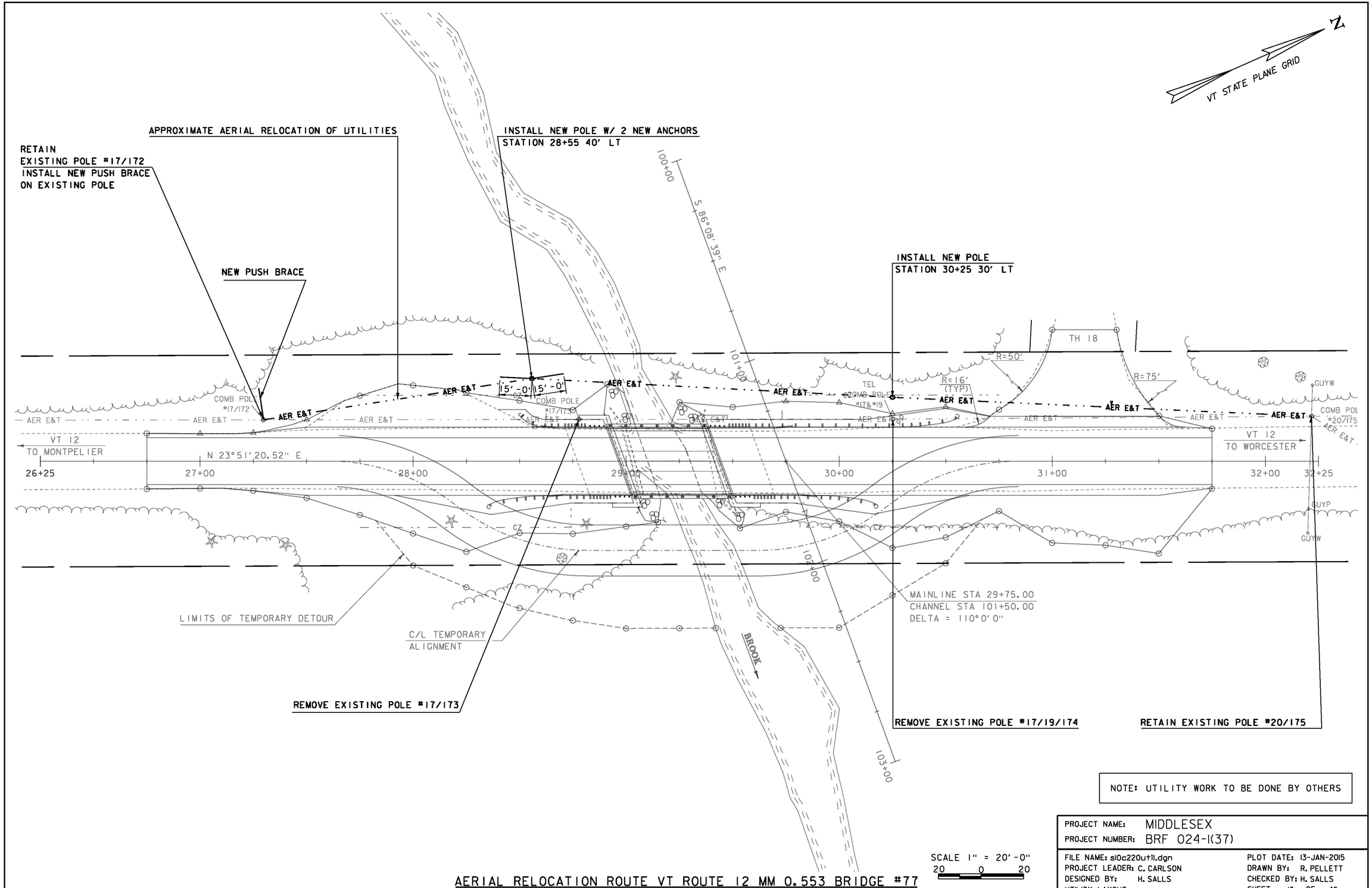
VT 12 PROFILE

HORIZONTAL SCALE 1" = 20'-0"
VERTICAL SCALE 1" = 10'-0"

THE GRADES SHOWN TO THE NEAREST TENTH ARE THE ORIGINAL GROUND ELEVATIONS ALONG THE PROPOSED ALIGNMENT.

THE GRADES SHOWN TO THE NEAREST HUNDREDTH ARE THE FINISH GRADES ALONG THE PROPOSED ALIGNMENT.

PROJECT NAME:	MIDDLESEX
PROJECT NUMBER:	BRF 024-1(37)
FILE NAME: s10c220pro.dgn	PLOT DATE: 13-JAN-2015
PROJECT LEADER: C. CARLSON	DRAWN BY: R. PELLETT
DESIGNED BY: H. SALLS	CHECKED BY: H. SALLS
VT 12 PROFILE	SHEET 12 OF 46

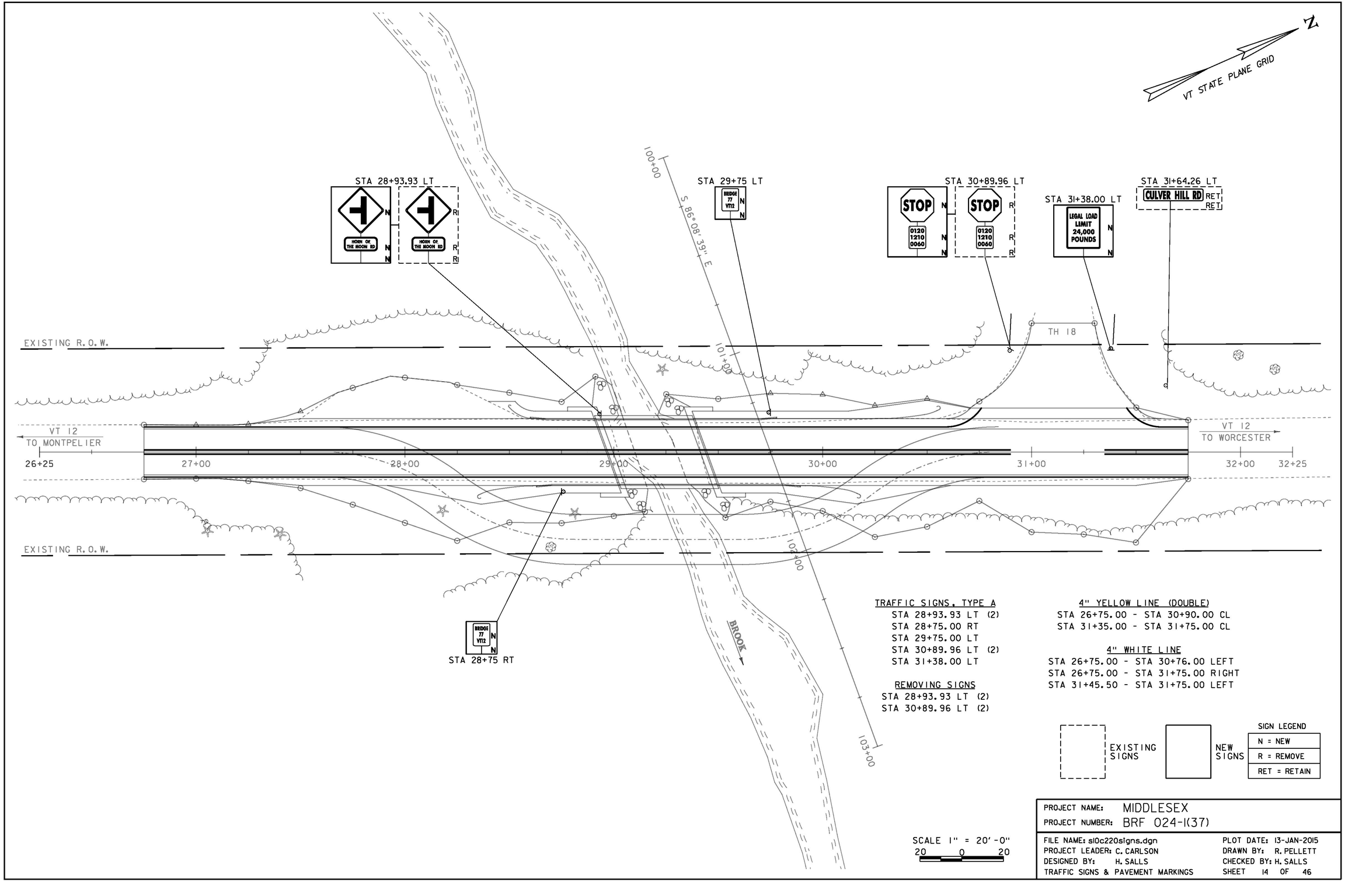


NOTE: UTILITY WORK TO BE DONE BY OTHERS

SCALE 1" = 20'-0"
20 0 20

AERIAL RELOCATION ROUTE VT ROUTE 12 MM 0.553 BRIDGE #77

PROJECT NAME:	MIDDLESEX
PROJECT NUMBER:	BRF 024-1(37)
FILE NAME: s10c220ut11.dgn	PLOT DATE: 13-JAN-2015
PROJECT LEADER: C. CARLSON	DRAWN BY: R. PELLETT
DESIGNED BY: H. SALLS	CHECKED BY: H. SALLS
UTILITY LAYOUT	SHEET 13 OF 46



TRAFFIC SIGNS, TYPE A

STA 28+93.93 LT (2)
STA 28+75.00 RT
STA 29+75.00 LT
STA 30+89.96 LT (2)
STA 31+38.00 LT

REMOVING SIGNS

STA 28+93.93 LT (2)
STA 30+89.96 LT (2)

4" YELLOW LINE (DOUBLE)

STA 26+75.00 - STA 30+90.00 CL
STA 31+35.00 - STA 31+75.00 CL

4" WHITE LINE

STA 26+75.00 - STA 30+76.00 LEFT
STA 26+75.00 - STA 31+75.00 RIGHT
STA 31+45.50 - STA 31+75.00 LEFT

EXISTING SIGNS

NEW SIGNS

SIGN LEGEND
N = NEW
R = REMOVE
RET = RETAIN

SCALE 1" = 20'-0"
20 0 20

PROJECT NAME: MIDDLESEX
PROJECT NUMBER: BRF 024-1(37)

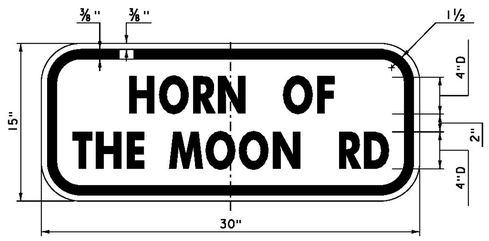
FILE NAME: s10c220signs.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: H. SALLS
TRAFFIC SIGNS & PAVEMENT MARKINGS

PLOT DATE: 13-JAN-2015
DRAWN BY: R. PELLETT
CHECKED BY: H. SALLS
SHEET 14 OF 46

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET

MILEMARKER, STATION, OR SIGN NUMBER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (in)	HEIGHT (in)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL lb/ft 1.12	2.0	3.0	SQUARE STEEL (in) 1.75 lb/ft 1.88	2.0 lb/ft 2.42	2.5 lb/ft 3.35	ANCHOR	SLEEVE	TUBULAR ALUMINUM Ø (in) 3.0 lb/ft 1.3	4.0 lb/ft 1.7	4.0 MOD lb/ft 1.7	TUBULAR STEEL Ø (in) FOUNDATION	3.0 lb/ft 7.6	3.5 lb/ft 9.0	4.0 lb/ft 10.8	5.0 lb/ft 14.6	W-SHAPE STEEL FTG. SIZE 24"	30"	WEIGHT	POST SIZE	SIGN FRAME REQUIRED	REMARKS	SIGN DETAIL DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
28+75.00 RT	BRIDGE 77 VT12	1	6	8	0.33						1					X		X																VD-701		T-42
28+93.93 LT		1	30	30	6.25						1					X		X																W2-2		E-155
	HORN OF THE MOON RD	1	30	15	3.13						-					-		-																W16-8p	THIS SHEET	
29+75.00 LT	BRIDGE 77 VT12	1	6	8	0.33						1					X		X																VD-701		T-42
30+89.96 LT	STOP	1	30	30	6.25						1					X		X																R1-1		E-143
	0120 1210 0060	1	6	10	0.42						1					-		-																VD-700		T-44
31+38.00 LT	LEGAL LOAD LIMIT 24,000 POUNDS	1	24	30	5.00						1					X		X																VR-017		E-141



W16-8p

COLORS: LEGEND - BLACK
BACKGROUND - YELLOW (RETROREFLECTIVE)

DIMENSIONS WILL MATCH SISTER SIGN
APPROACH FROM OPPOSITE DIRECTION

SHS = STANDARD HIGHWAY SIGNS BOOK

FINAL POST LENGTHS ARE TO BE DETERMINED IN THE FIELD.

	SF	SF	EA.	SF		FT	FT	FT	FT	FT 50	FT	EA	LB	LB	LB	LB	LB	LB	LB	EA.	EA.	LB
TOTALS	21.71									50												

PROJECT NAME: MIDDLESEX
PROJECT NUMBER: BRF 024-1(37)

FILE NAME: s10c220signs.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: H. SALLS
TRAFFIC SIGN SUMMARY

PLOT DATE: 06-FEB-2015
DRAWN BY: R. PELLETT
CHECKED BY: H. SALLS
SHEET 15 OF 46

SOIL CLASSIFICATION

AASHTO	
A1	Gravel and Sand
A3	Fine Sand
A2	Silty or Clayey Gravel and Sand
A4	Silty Soil - Low Compressibility
A5	Silty Soil - Highly Compressible
A6	Clayey Soil - Low Compressibility
A7	Clayey Soil - Highly Compressible

ROCK QUALITY DESIGNATION

R.Q.D. (%)	ROCK DESCRIPTION
<25	Very Poor
25 to 50	Poor
51 to 75	Fair
76 to 90	Good
>90	Excellent

SHEAR STRENGTH

UNDRAINED SHEAR STRENGTH IN P.S.F.	CONSISTENCY
<250	Very Soft
250-500	Soft
500-1000	Med. Stiff
1000-2000	Stiff
2000-4000	Very Stiff
>4000	Hard

CORRELATION GUIDE OF "N" TO DENSITY/CONSISTENCY

DENSITY (GRANULAR SOILS)		CONSISTENCY (COHESIVE SOILS)	
N	DESCRIPTIVE TERM	N	DESCRIPTIVE TERM
<5	Very Loose	<2	Very Soft
5-10	Loose	2-4	Soft
11-24	Med. Dense	5-8	Med. Stiff
25-50	Dense	9-15	Stiff
>50	Very Dense	16-30	Very Stiff
		31-60	Hard
		>60	Very Hard

COMMONLY USED SYMBOLS

▼	Water Elevation
⊕	Standard Penetration Boring
⊕	Auger Boring
⊙	Rod Sounding
S	Sample
N	Standard Penetration Test Blow Count Per Foot For: 2" O.D. Sampler 1 3/8" I.D. Sampler Hammer Weight Of 140 Lbs. Hammer Fall Of 30"
VS	Field Vane Shear Test
US	Undisturbed Soil Sample
B	Blast
DC	Diamond Core
MD	Mud Drill
WA	Wash Ahead
HSA	Hollow Stem Auger
AX	Core Size 1 1/8"
BX	Core Size 1 5/8"
NX	Core Size 2 1/8"
M	Double Tube Core Barrel Used
LL	Liquid Limit
PL	Plastic Limit
PI	Plasticity Index
NP	Non Plastic
w	Moisture Content (Dry Wgt. Basis)
D	Dry
M	Moist
MTW	Moist To Wet
W	Wet
Sat	Saturated
Bo	Boulder
Gr	Gravel
Sa	Sand
Si	Silt
Cl	Clay
HP	Hardpan
Le	Ledge
NLTD	No Ledge To Depth
CNPF	Can Not Penetrate Further
TLOB	Top of Ledge Or Boulder
NR	No Recovery
Rec.	Recovery
%Rec.	Percent Recovery
RQD	Rock Quality Designation
CBR	California Bearing Ratio
<	Less Than
>	Greater Than
R	Refusal (N > 100)
VTSPG	NAD83 - See Note 7

COLOR

blk	Black	pnk	Pink
bl	Blue	pu	Purple
brn	Brown	rd	Red
dk	Dark	tn	Tan
gry	Gray	wh	White
gn	Green	yel	Yellow
lt	Light	mltc	Multicolored
or	Orange		

DEFINITIONS (AASHTO)

BEDROCK (LEDGE) - Rock in its native location of indefinite thickness.

BOULDER - A rock fragment with an average dimension > 12 inches.

COBBLE - Rock fragments with an average dimension between 3 and 12 inches.

GRAVEL - Rounded particles of rock < 3" and > 0.0787" (#10 sieve).

SAND - Particles of rock < 0.0787" (#10 sieve) and > 0.0029" (#200 sieve).

SILT - Soil < 0.0029" (#200 sieve), non or slightly plastic and exhibits no strength when air-dried.

CLAY - Fine grained soil, exhibits plasticity when moist and considerable strength when air-dried.

VARVED - Alternate layers of silt and clay.

HARDPAN - Extremely dense soil, cemented layer, not softened when wet.

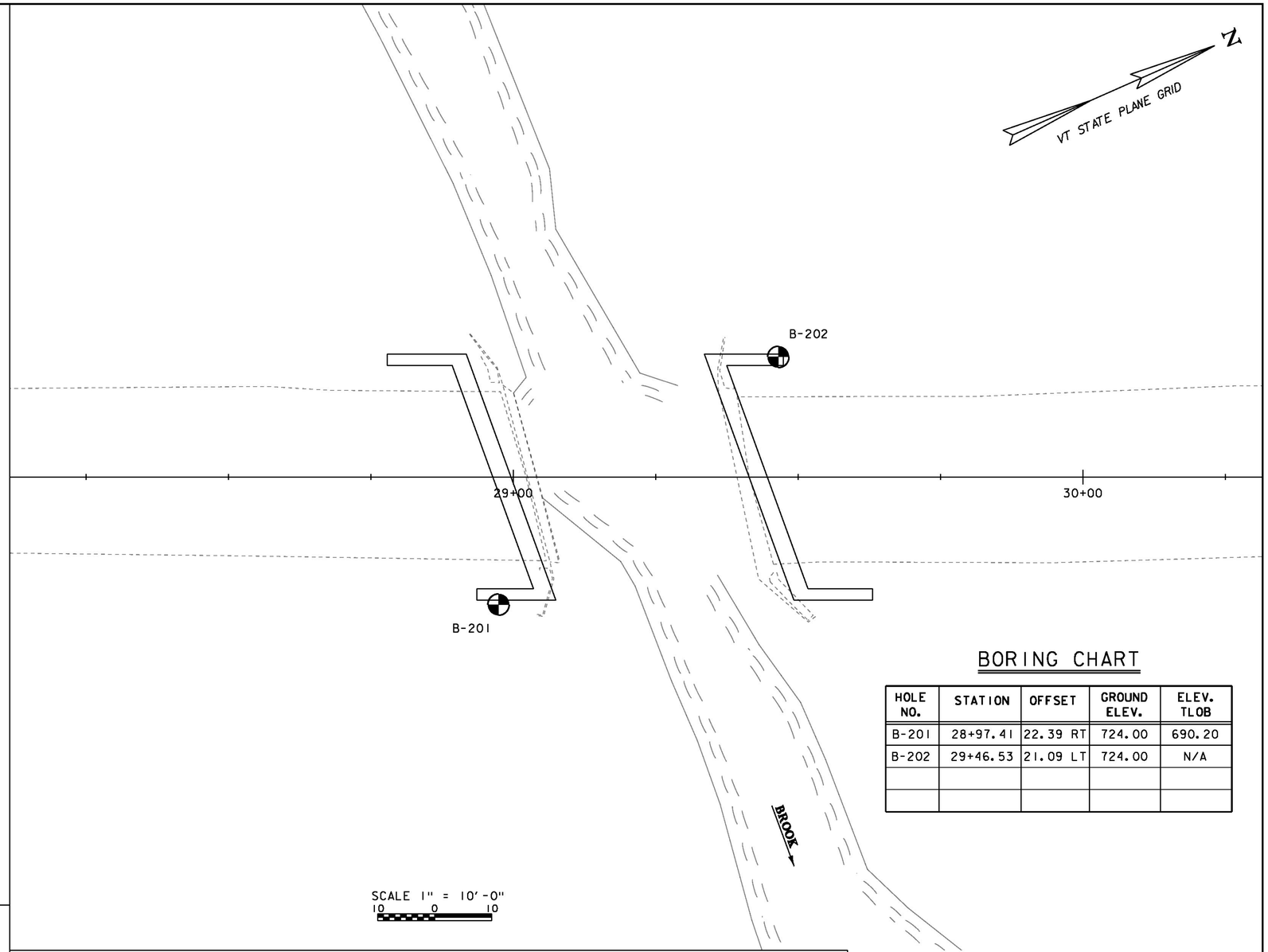
MUCK - Soft organic soil (containing > 10% organic material.

MOISTURE CONTENT - Weight of water divided by dry weight of soil.

FLOWING SAND - Granular soil so saturated (loose) that it flows into drill casing during extraction of wash rod.

STRIKE - Angle from magnetic north to line of intersection of bed with a horizontal plane.

DIP - Inclination of bed with a horizontal plane.



BORING CHART

HOLE NO.	STATION	OFFSET	GROUND ELEV.	ELEV. TLOB
B-201	28+97.41	22.39 RT	724.00	690.20
B-202	29+46.53	21.09 LT	724.00	N/A

GENERAL NOTES

1. The subsurface explorations shown herein were made between 01/18/12 and 01/31/12 by the Agency.
2. Soil and rock classifications, properties and descriptions are based on engineering interpretation from available subsurface information by the Agency and may not necessarily reflect actual variations in subsurface conditions that may be encountered between individual boring or sample locations.
3. Observed water levels and/or conditions indicated are as recorded at the time of exploration and may vary according to the prevailing rainfall, methods of exploration and other factors.
4. Engineering judgment was exercised in preparing the subsurface information presented herein. Analysis and interpretation of subsurface data was performed and interpreted for Agency design and estimating purposes. Presentation of the information in the Contract is intended to provide the Contractor access to the same data available to the Agency. The subsurface information is presented in good faith and is not intended as a substitute for personal investigation, independent interpretation, independent analysis or judgment by the Contractor.
5. Pictorial structure details shown on the boring plan layout or soils profile are for illustrative purposes only and may not accurately portray final contract details.
6. Terminology used on boring logs to describe the hardness, degree of weathering, and spacing of fractures, joints and other discontinuities in the bedrock is defined in the AASHTO Manual on Subsurface Investigations, 1988.
7. Northing and Easting coordinates are shown in Vermont State Plane Grid North American Datum 1983 in meters and survey feet.

PROJECT NAME: MIDDLESEX
PROJECT NUMBER: BRF 024-1(37)

FILE NAME: s10c220bor.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: H. SALLS
BORING INFORMATION

PLOT DATE: 13-JAN-2015
DRAWN BY: R. PELLETT
CHECKED BY: H. SALLS
SHEET 16 OF 46

STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH SECTION
SUBSURFACE INFORMATION

BORING LOG

MIDDLESEX
BRF 024-1(37)
VT-12 BR-77

Boring No.: **B-201**
Page No.: 1 of 1
Pin No.: 10C220
Checked By: NSM

Boring Crew: GARROW, SALISBURY, PORTER
Date Started: 1/18/12 Date Finished: 1/25/12
VTSPG NAD83: N 660731.08 ft E 1619938.77 ft
Station: 28+97.41 Offset: 22.39
Ground Elevation: 724.0 ft

	Casing	Sampler
Type:	WB	SS
I.D.:	4 in	1.5 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:	Auto/AWJ	
Rig:	CME 45C TRACK	C. = 1.34

Groundwater Observations

Date	Depth (ft)	Notes
01/24/12	33.2	AM

BOTTOM OF PILE CAP
ELEV. 718.00

ESTIMATED PILE
TIP ELEV. 690.00

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (RQD %)	Drill Rate minutes/ft	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
		A-2-4, GrSa, brn, Moist, Rec. = 0.8 ft				WH-2-3-R (5)	16.6	26.8	55.1	18.1
		Field Note:, NXDC, Cobbles								
		Field Note:, No Recovery. Stone in sampler				8-5-2-2 (7)				
5										
		Field Note:, NXDC, Cobbles								
		A-2-4, GrSiSa, brn, Moist, Rec. = 1.5 ft				9-16-19-22 (35)	13.9	27.8	38.7	33.5
10										
		Field Note:, NXDC, Cobbles								
		A-1-b, SiSaGr, brn, Moist, Rec. = 0.6 ft				10-27-52-41 (79)	8.0	53.5	26.3	20.2
15										
		Field Note:, NXDC, Boulder								
		A-1-b, SiGrSa, brn, MTW, Rec. = 1.1 ft				4-10-18-17 (28)	10.8	38.5	38.9	22.6
20										
		Visual Classification, SiGrSa, brn, MTW, Rec. = 0.5 ft, Similar material as 19-21 ft.				R@6.0"	11.0			
		Field Note:, NXDC, Boulder								
25										
		A-1-b, SiGrSa, brn, MTW, Rec. = 1.2 ft				13-23-25-22 (48)	10.8	35.9	39.5	24.6
30										
		A-1-b, GrSa, brn, MTW, Rec. = 0.3 ft				8-R@3.5"	11.3	36.5	48.5	15.0
35		33.8 ft - 35.2 ft, Grayish green, Chlorite-plagioclase-quartz-muscovite Schist, Moderately hard, Unweathered, Good rock, NXMDC, RMR = 79	1 (75)	100 (100)	6 4	Top of Bedrock @ 33.8 ft				
		35.2 ft - 38.8 ft, Grayish green, Chlorite-plagioclase-quartz-muscovite Schist, Moderately hard, Unweathered, Good rock, NXMDC, RMR = 79	2 (75)	94 (94)	12 13 11 6					
40		38.8 ft - 43.8 ft, Grayish green, Chlorite-plagioclase-quartz-muscovite Schist, Moderately hard, Unweathered, Good rock, NXMDC, RMR = 76	3 (75)	92 (74)	9 9 18 9 9					
45		Hole stopped @ 43.8 ft								

Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. C. is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations may occur due to other factors than those present at the time measurements were made.

BORING LOG 2 MIDDLESEX BRF 024-1(37).GPJ VERMONT AOT.GDT 10/28/14

STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH SECTION
SUBSURFACE INFORMATION

BORING LOG

MIDDLESEX
BRF 024-1(37)
VT-12 BR-77

Boring No.: **B-202**
Page No.: 1 of 1
Pin No.: 10C220
Checked By: NSM

Boring Crew: GARROW, SALISBURY, PORTER
Date Started: 1/26/12 Date Finished: 1/31/12
VTSPG NAD83: N 660793.58 ft E 1619918.87 ft
Station: 29+46.53 Offset: -21.09
Ground Elevation: 724.0 ft

	Casing	Sampler
Type:	WB	SS
I.D.:	4 in	1.5 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:	Auto/AWJ	
Rig:	CME 45C TRACK	C. = 1.34

Groundwater Observations

Date	Depth (ft)	Notes
01/30/12	29.4	AM

BOTTOM OF PILE CAP
ELEV. 718.00

ESTIMATED PILE
TIP ELEV. 665.00

Depth (ft)	Strata (1)	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
		Field Note:, NXDC, Sand, No Recovery.							
		A-1-b, SaGr, brn, Moist, Rec. = 1.2 ft	1-3-5-4 (8)	15.4	41.4	39.7	18.9		
10		Field Note:, NXDC, Gravel, No Recovery.							
		A-1-b, GrSa, brn, Moist, Rec. = 1.5 ft	12-20-19-17 (39)	16.0	36.9	45.4	17.7		
		Field Note:, NXDC, Cobbles							
		A-4, Si, gry, Moist, Rec. = 1.5 ft	3-3-2-3 (5)	40.4	0.3	2.2	97.5	38	6
20		A-4, GrSaSl, brn, Moist, Rec. = 1.5 ft	10-11-14-16 (25)	13.3	23.8	35.5	40.7		
		Field Note:, NXDC, Gravel, No Recovery.	16-19-17-15 (36)						
		Field Note:, NXDC, Cobbles							
30		A-1-b, SiGrSa, gry, Moist, Rec. = 1.0 ft, Broken rock was within sample.	8-16-22-R@2.5"	7.5	38.7	39.9	21.4		
		Field Note:, NXDC, Cobbles							
		Field Note:, NXDC, Cobbles							
		A-2-4, GrSiSa, brn, Moist, Rec. = 0.9 ft	5-5-6-8 (11)	13.1	20.1	46.0	33.9		
40		Field Note:, NXDC, Cobbles							
		Field Note:, NXDC, Cobbles							
		A-2-4, SaSiGr (HP), gry, MTD, Rec. = 1.2 ft	32-40-30-R@0.0"	8.5	36.9	27.8	35.3		
		Field Note:, NXDC, Gravel, No Recovery.							
50		A-4, GrSaSl (HP), gry, MTD, Rec. = 0.5 ft	R@6.0"	9.1	20.0	38.7	41.3		
		Hole stopped @ 48.5 ft No Ledge to Depth.							

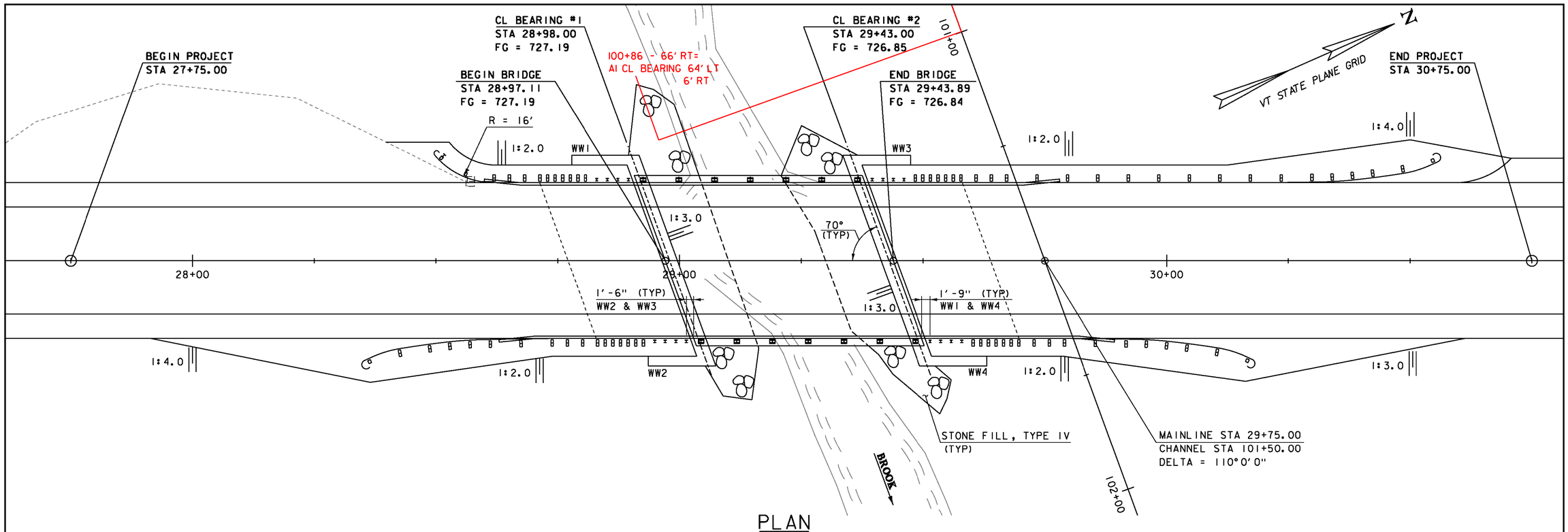
Notes:
1. Stratification lines represent approximate boundary between material types. Transition may be gradual.
2. N Values have not been corrected for hammer energy. C. is the hammer energy correction factor.
3. Water level readings have been made at times and under conditions stated. Fluctuations may occur due to other factors than those present at the time measurements were made.

BORING LOG 2 MIDDLESEX BRF 024-1(37).GPJ VERMONT AOT.GDT 10/28/14

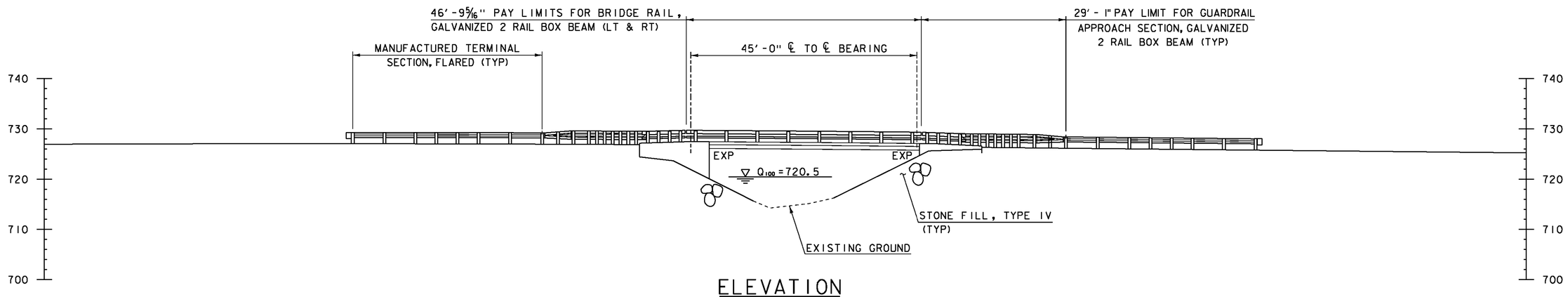
PROJECT NAME: MIDDLESEX
PROJECT NUMBER: BRF 024-1(37)

FILE NAME: s10c220bor.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: MATERIALS & RESEARCH
BORING LOGS

PLOT DATE: 13-JAN-2015
DRAWN BY: C. BURRALL
CHECKED BY: H. SALLS
SHEET 17 OF 46



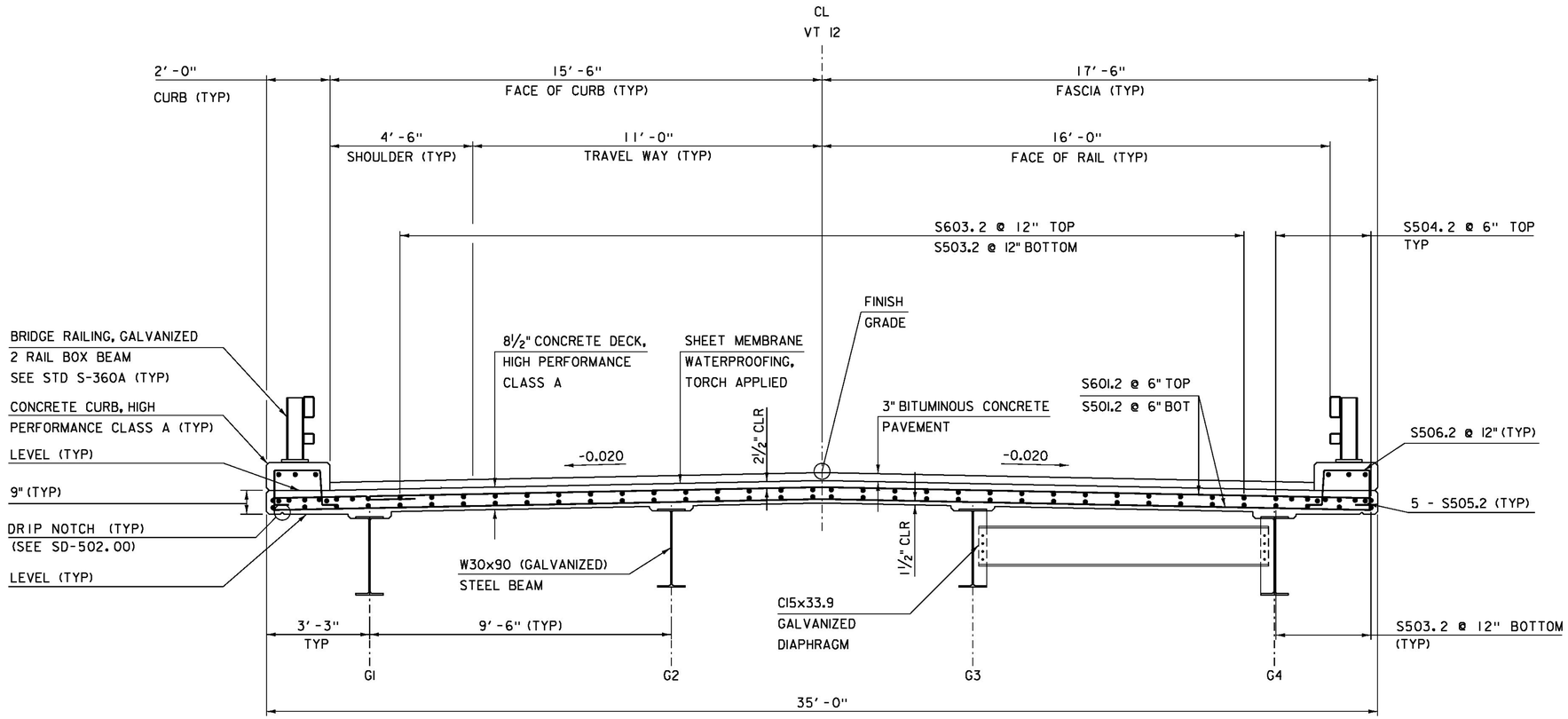
PLAN



ELEVATION

SCALE 1" = 10'-0"
10 0 10

PROJECT NAME:	MIDDLESEX
PROJECT NUMBER:	BRF 024-1(37)
FILE NAME: s10c220pe.dgn	PLOT DATE: 13-JAN-2015
PROJECT LEADER: C. CARLSON	DRAWN BY: R. PELLETT
DESIGNED BY: H. SALLS	CHECKED BY: H. SALLS
PLAN & ELEVATION	SHEET 18 OF 46

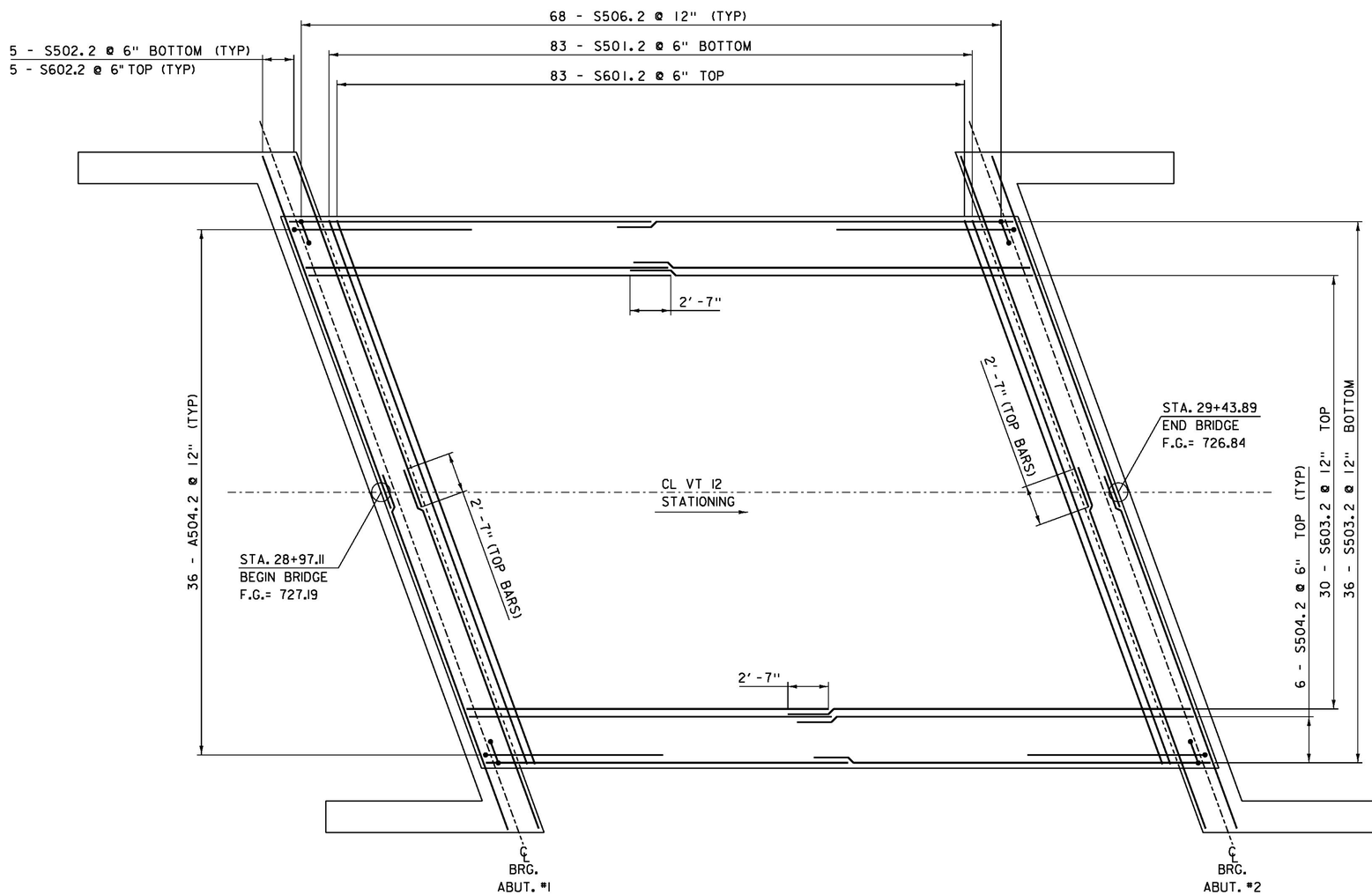


DECK REINFORCING SECTION

SCALE ½" = 1'-0"

PROJECT NAME:	MIDDLESEX
PROJECT NUMBER:	BRF 024-1(37)

FILE NAME: s10c220sup.dgn	PLOT DATE: 13-JAN-2015
PROJECT LEADER: C. CARLSON	DRAWN BY: C. BURRALL
DESIGNED BY: H. SALLS	CHECKED BY: H. SALLS
DECK REINFORCING SECTION	SHEET 19 OF 46



DECK REINFORCING PLAN

SCALE 1/4"=1'-0"

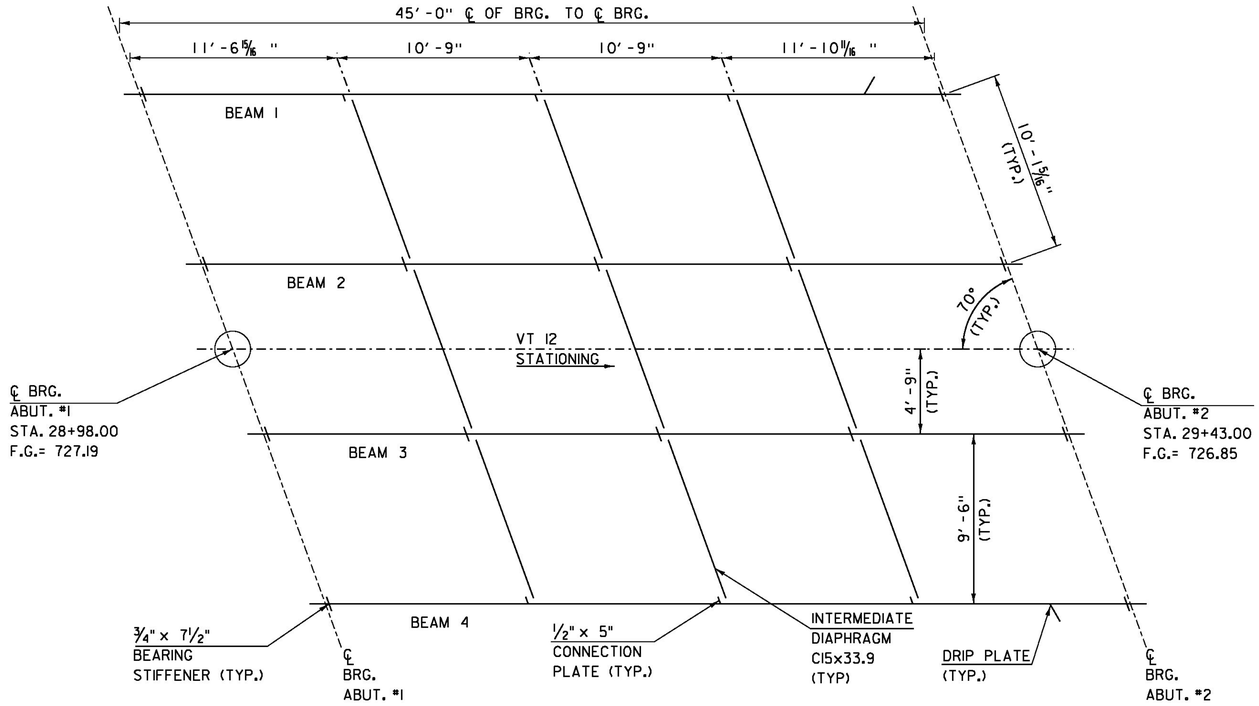
NOTES:

NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD
3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
2'-2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.

ALL REINFORCEMENT FOR BRIDGE RAIL NOT SHOWN FOR CLARITY SEE STD S-360A.

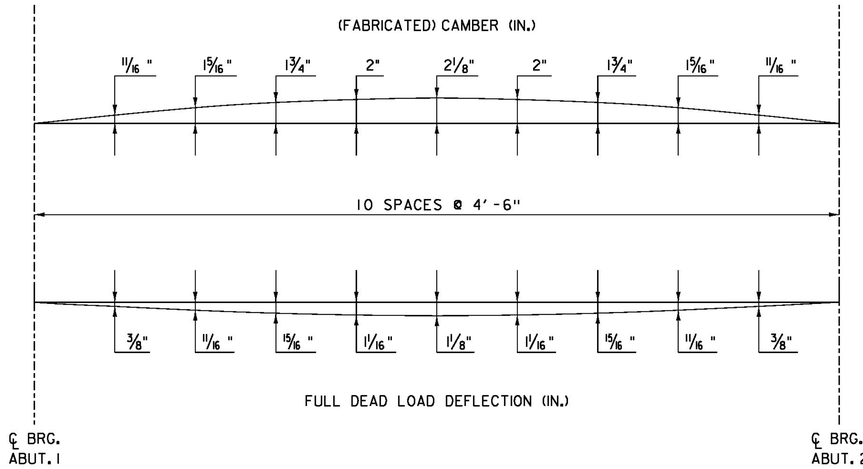
PROJECT NAME:	MIDDLESEX
PROJECT NUMBER:	BRF 024-1(37)

FILE NAME: s10c220sup.dgn	PLOT DATE: 13-JAN-2015
PROJECT LEADER: C. CARLSON	DRAWN BY: C. BURRALL
DESIGNED BY: H. SALLS	CHECKED BY: H. SALLS
DECK REINFORCING PLAN	SHEET 20 OF 46



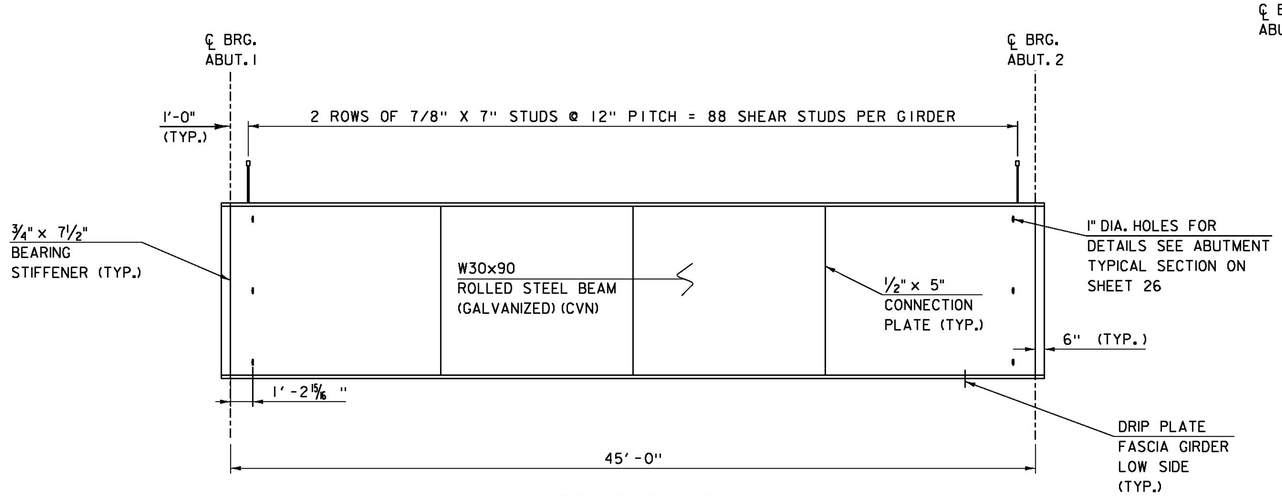
FRAMING PLAN

SCALE 1/4"=1'-0"



CAMBER AND DEAD LOAD DEFLECTION

HORIZONTAL SCALE 1/4"=1'-0"
VERTICAL SCALE 2"=1'-0"



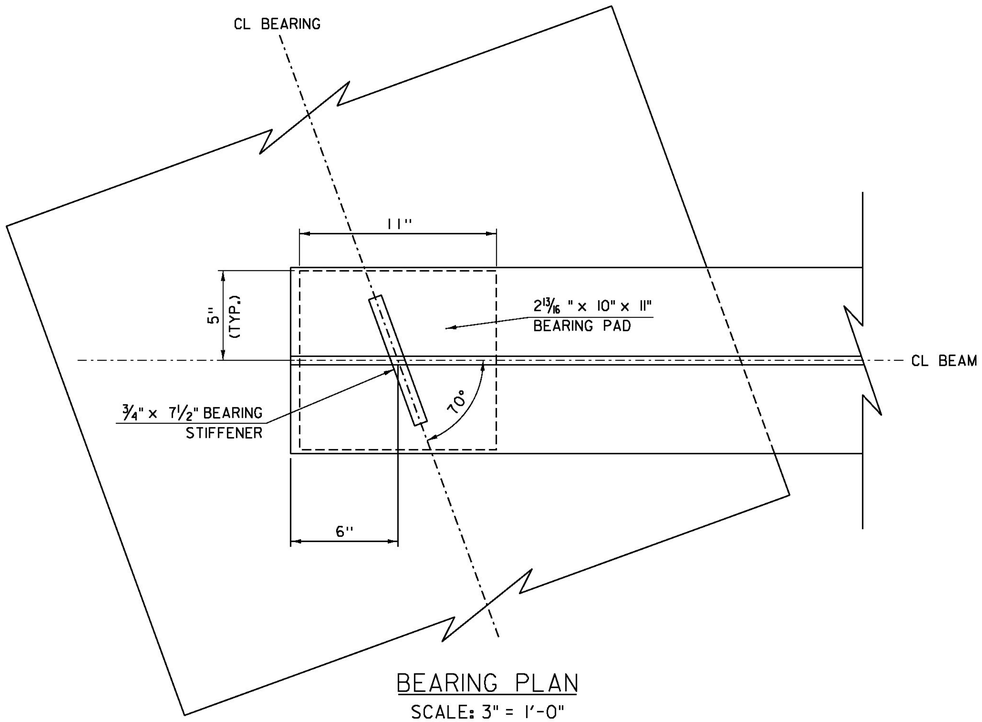
GIRDER ELEVATION

HORIZONTAL SCALE 1/4"=1'-0"
VERTICAL SCALE 1"=1'-0"

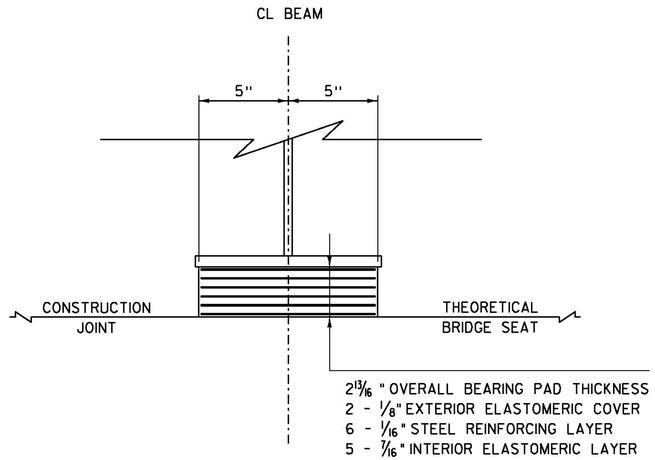
NOTES:

1. SEE STRUCTURES DETAIL SHEET SD-601 FOR DRIP PLATE DETAILS.
2. SEE STRUCTURES DETAIL SHEET SD-602 FOR DIAPHRAGM, CONNECTION PLATE, AND STIFFENER DETAILS.
3. DEAD LOAD DEFLECTION INCLUDES: BEAM, DIAPHRAGMS, DECK & BRIDGE RAIL.
4. CVN - SHALL MEET CHARPY V-NOTCH REQUIREMENTS FOR MAIN MEMBERS AS SPECIFIED IN SECTION 714.

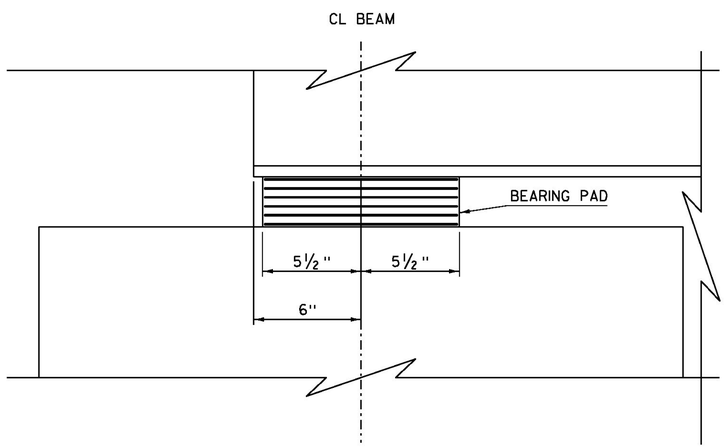
PROJECT NAME: MIDDLESEX	
PROJECT NUMBER: BRF 024-1(37)	
FILE NAME: s10c220sup.dgn	PLOT DATE: 13-JAN-2015
PROJECT LEADER: C. CARLSON	DRAWN BY: C. BURRALL
DESIGNED BY: H. SALLS	CHECKED BY: H. SALLS
FRAMING PLAN	SHEET 21 OF 46



BEARING PLAN
SCALE: 3" = 1'-0"



BEARING SECTION
SCALE: 3" = 1'-0"



BEARING ELEVATION
SCALE: 3" = 1'-0"

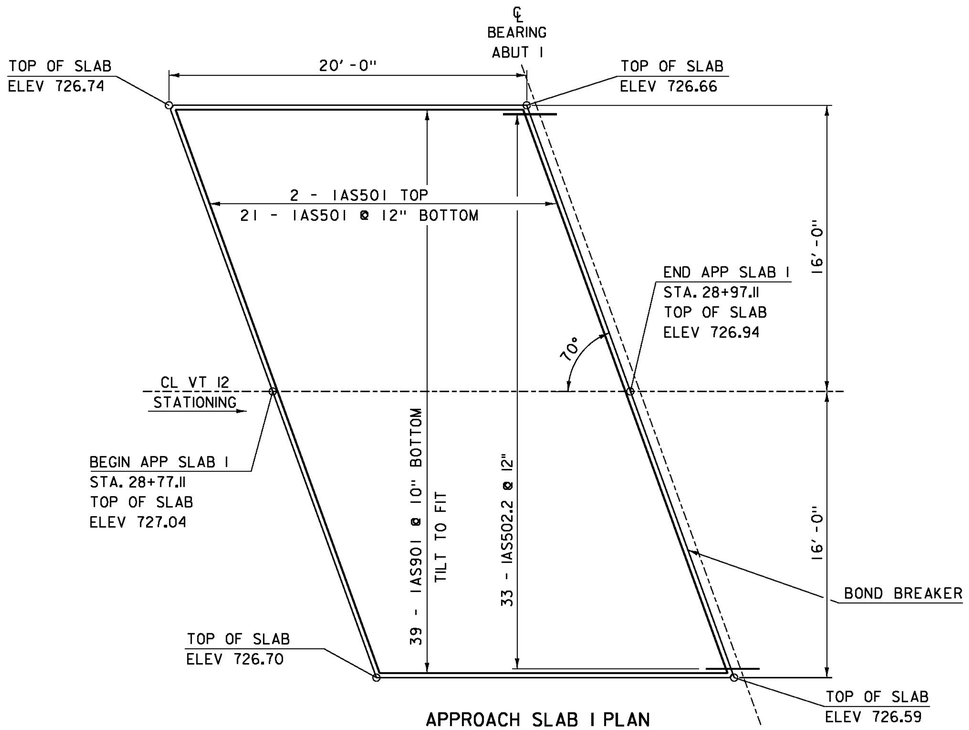
BEARING DEVICE NOTES

1. BEARINGS SHALL BE PAID FOR UNDER ITEM 531.17 "BEARING DEVICE ASSEMBLY, STEEL REINFORCED ELASTOMERIC PAD" AND SHALL CONFORM TO APPLICABLE SUBSECTIONS OF SECTIONS 531 AND 731.

2. ALL REINFORCEMENT BETWEEN LAYERS OF ELASTOMERIC SHALL BE STEEL MEETING ASTM A36. ALL INTERNAL STEEL PLATES SHALL BE SAND BLASTED AND FREE OF COATINGS, RUST, AND MILL SCALE. THE PLATES SHALL BE FREE OF SHARP EDGES AND BURRS.

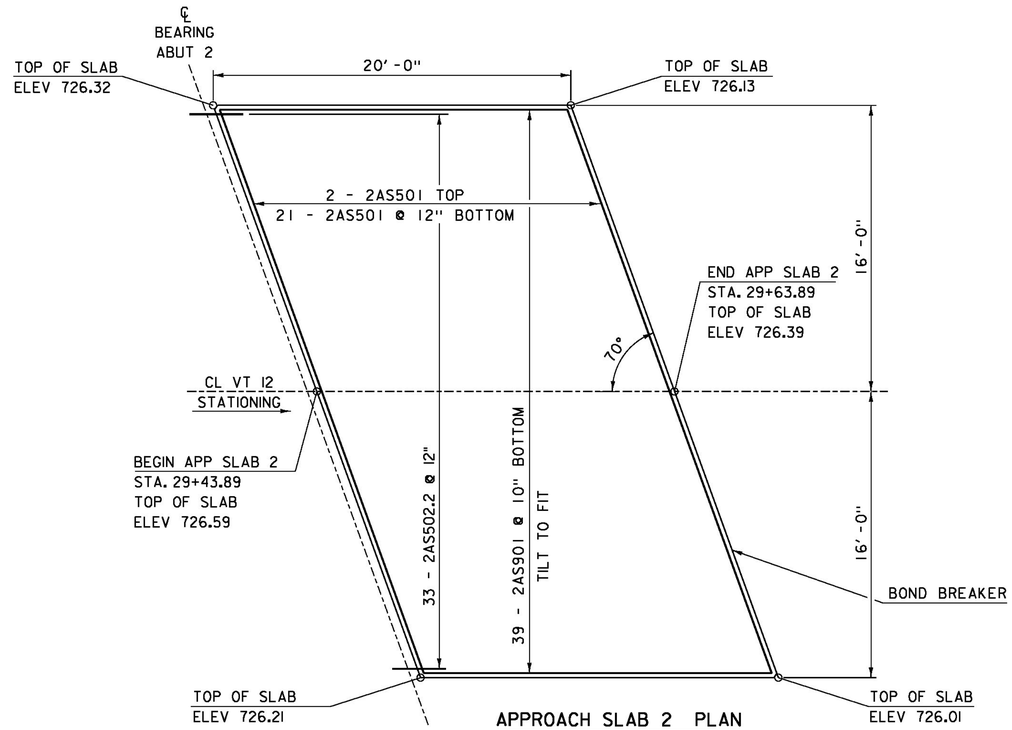
3. STEEL REINFORCED ELASTOMERIC PAD BEARINGS SHALL HAVE A MINIMUM OF 1/8" EDGE SEAL OF ELASTOMER INTEGRAL WITH THE BEARING OVER ALL INTERNAL PLATES.

PROJECT NAME: MIDDLESEX	
PROJECT NUMBER: BRF 024-1(37)	
FILE NAME: s10c220sup.dgn	PLOT DATE: 13-JAN-2015
PROJECT LEADER: C. CARLSON	DRAWN BY: C. BURRALL
DESIGNED BY: H. SALLS	CHECKED BY: H. SALLS
BEARING DETAILS	SHEET 22 OF 46



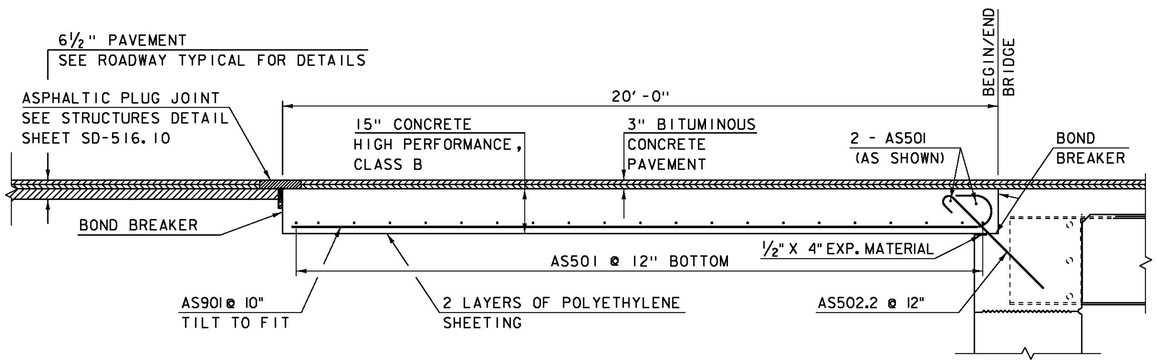
APPROACH SLAB 1 PLAN

SCALE 1/4" = 1'-0"



APPROACH SLAB 2 PLAN

SCALE 1/4" = 1'-0"



APPROACH SLAB DETAIL

SCALE ½" = 1'-0"

NOTES:

1. COMPACT THE SUBBASE IN THE AREA UNDER THE APPROACH SLAB TO A SMOOTH SURFACE.

2. MATERIAL FOR POLYETHYLENE SHEETING SHALL MEET THE REQUIREMENTS OF SUBSECTION 725.01(c) OF THE STANDARD SPECIFICATIONS. PLACE THE SHEETING ON TOP OF THE FINISHED SUBBASE FOR THE FULL LENGTH AND WIDTH OF THE APPROACH SLAB, AS SHOWN IN THE APPROACH SLAB DETAIL. LAP SHEETING AT LEAST 24 INCHES. PAYMENT INCIDENTAL TO ITEM 501.34 "CONCRETE, HIGH PERFORMANCE CLASS B".

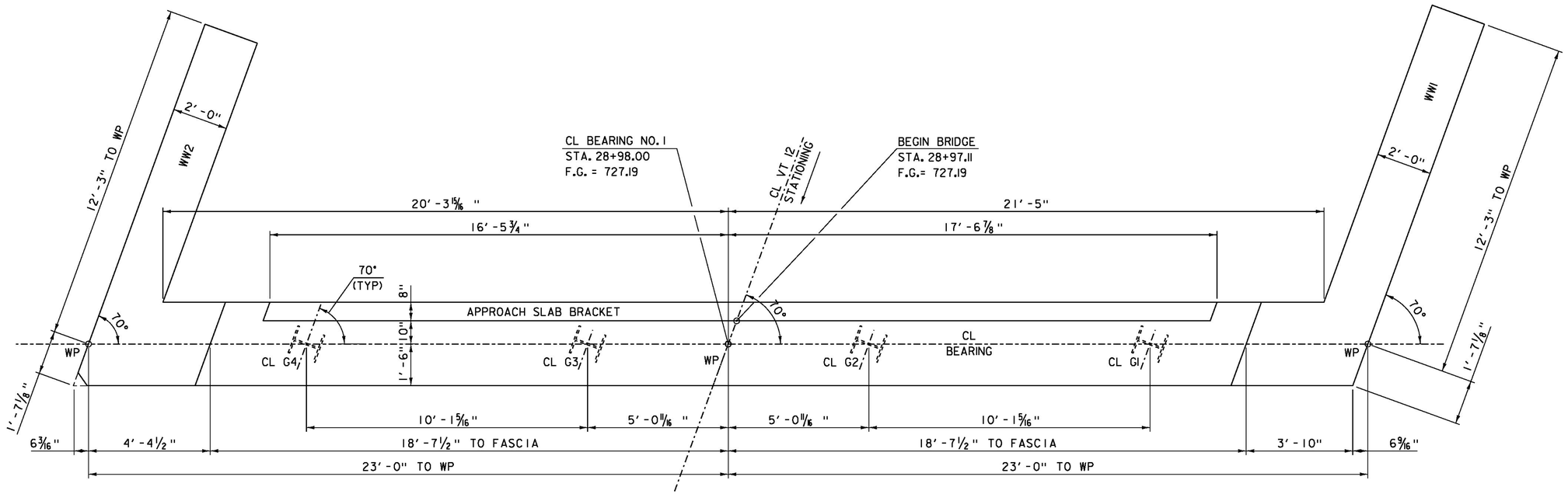
3. POUR APPROACH SLAB CONCRETE IN THE EARLY MORNING BEFORE THE SUPERSTRUCTURE EXPANDS.

4. APPLY 2 COATS TAR EMULSION. PAYMENT INCIDENTAL TO ITEM 501.34 "CONCRETE, HIGH PERFORMANCE CLASS B".

PROJECT NAME: MIDDLESEX
PROJECT NUMBER: BRF 024-1(37)

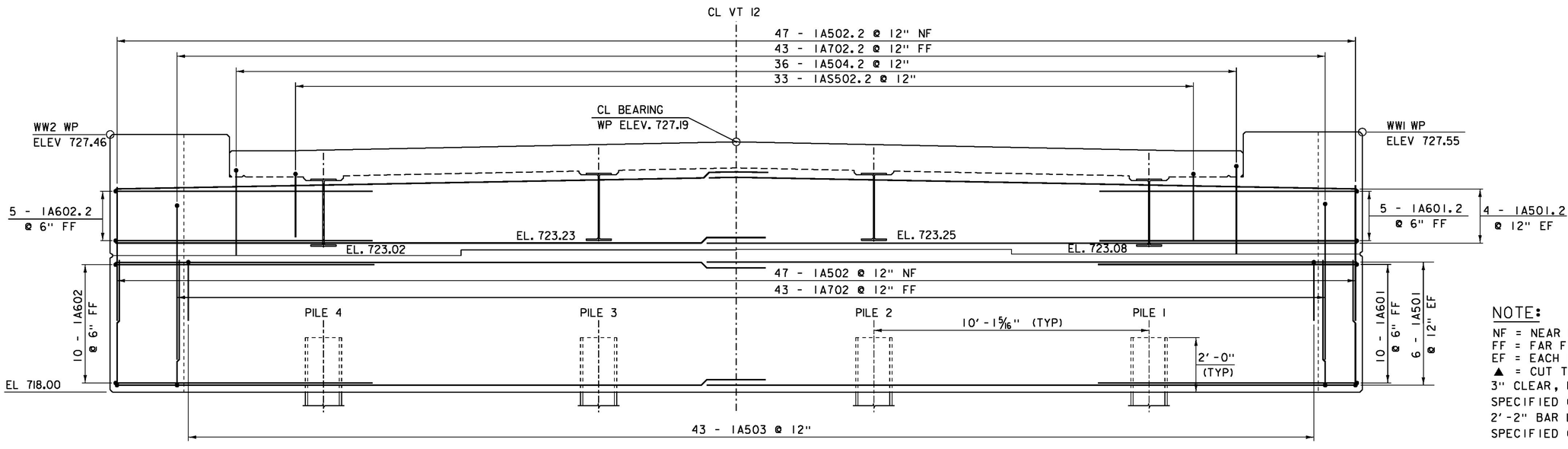
FILE NAME: s10c220sup.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: H. SALLS
APPROACH SLAB DETAILS

PLOT DATE: 13-JAN-2015
DRAWN BY: C. BURRALL
CHECKED BY: H. SALLS
SHEET 23 OF 46



ABUTMENT NO. 1 PLAN

SCALE ½"=1'-0"



ABUTMENT NO. 1 ELEVATION

SCALE ½"=1'-0"

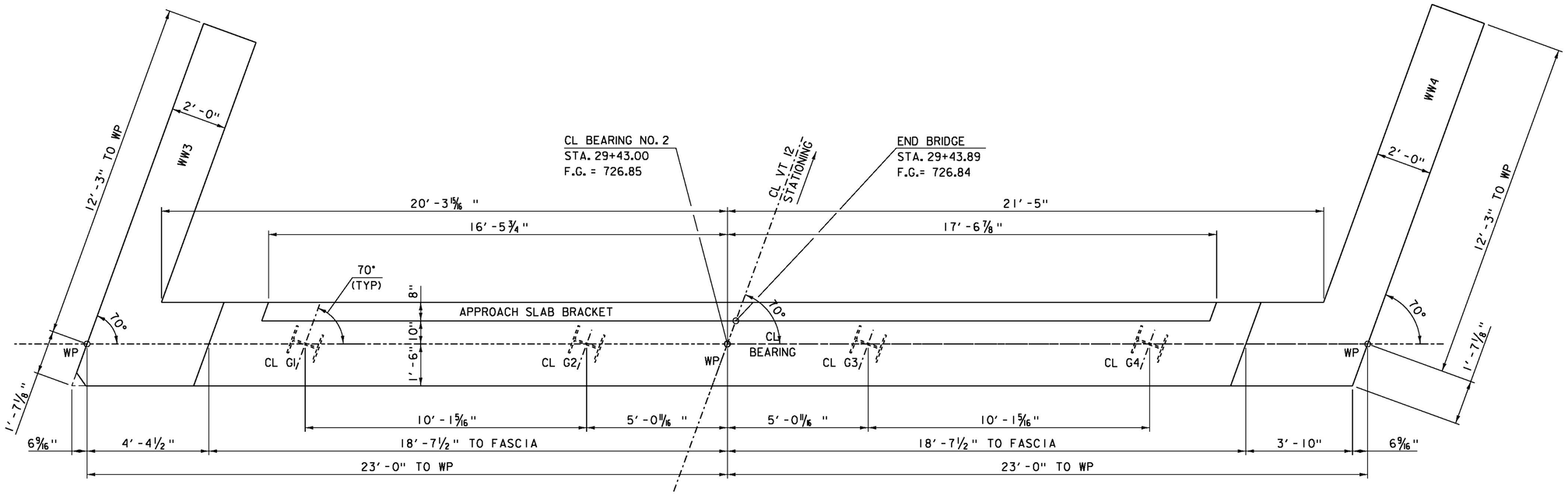
NOTE:

NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD
3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
2'-2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.

PROJECT NAME: MIDDLESEX
PROJECT NUMBER: BRF 024-1(37)

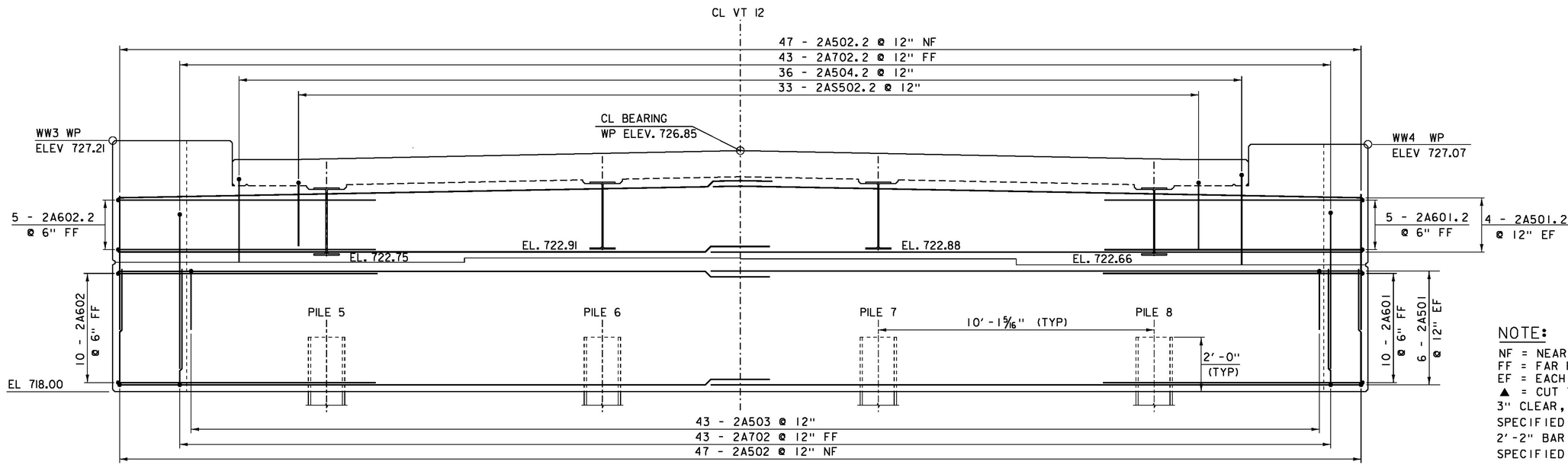
FILE NAME: s10c220sub.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: H. SALLS
ABUTMENT #1 PLAN AND ELEVATION

PLOT DATE: 06-FEB-2015
DRAWN BY: C. BURRALL
CHECKED BY: H. SALLS
SHEET 24 OF 46



ABUTMENT NO. 2 PLAN

SCALE ½"=1'-0"



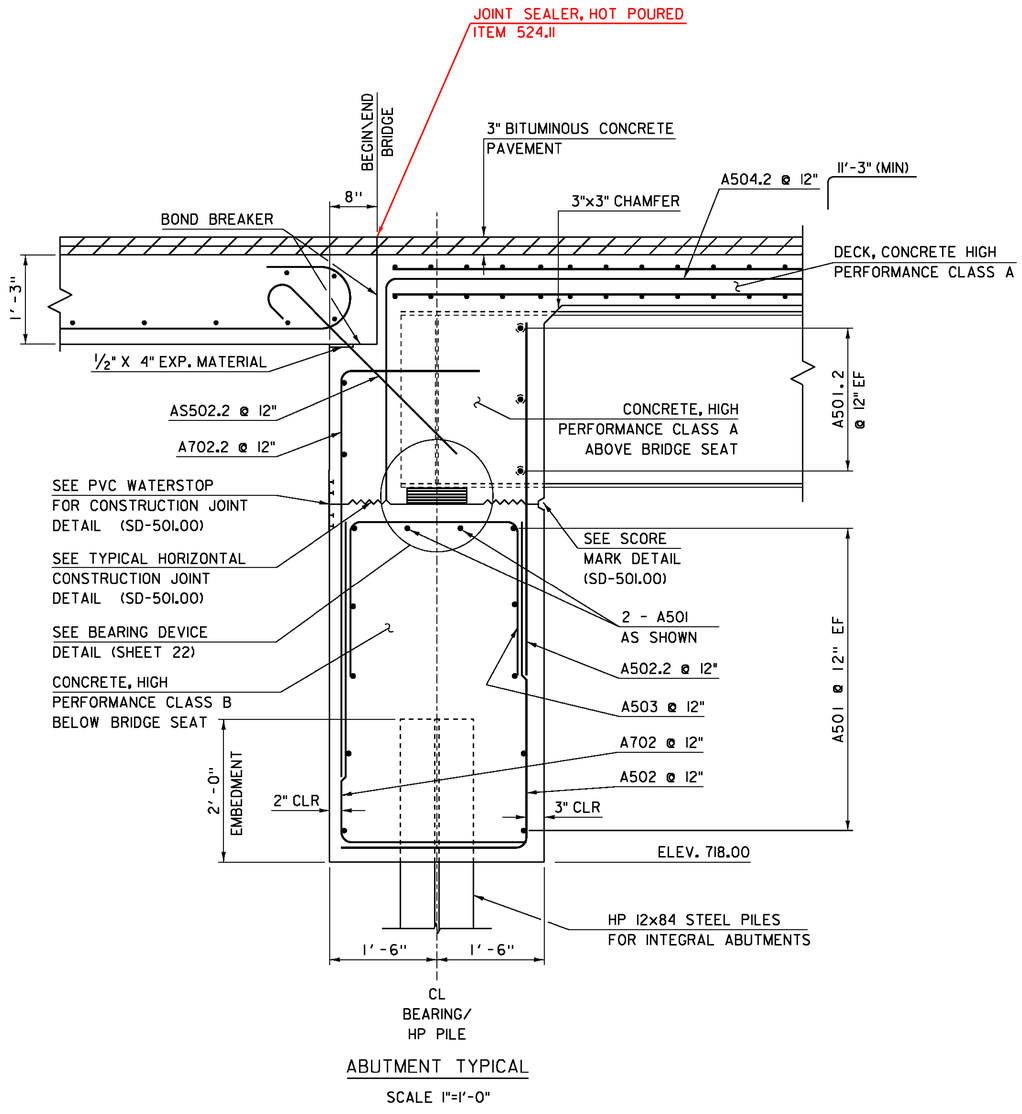
ABUTMENT NO. 2 ELEVATION

SCALE ½"=1'-0"

NOTE:

NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD
3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
2'-2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.

PROJECT NAME:	MIDDLESEX
PROJECT NUMBER:	BRF 024-1(37)
FILE NAME: s10c220sub.dgn	PLOT DATE: 06-FEB-2015
PROJECT LEADER: C. CARLSON	DRAWN BY: C. BURRALL
DESIGNED BY: H. SALLS	CHECKED BY: H. SALLS
ABUTMENT #2 PLAN AND ELEVATION	SHEET 25 OF 46



ABUTMENT TYPICAL

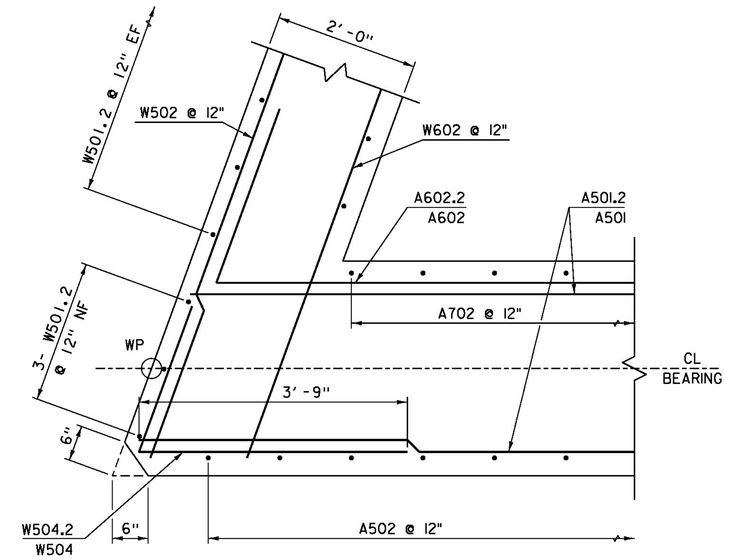
SCALE 1"=1'-0"

NOTE:

NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD
3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
2'-2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.

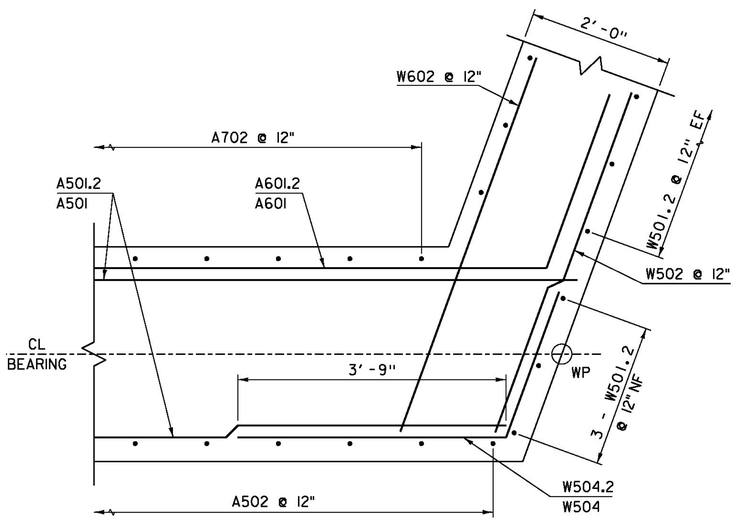
PROJECT NAME:	MIDDLESEX
PROJECT NUMBER:	BRF 024-1(37)

FILE NAME: s10c220sub.dgn	PLOT DATE: 06-FEB-2015
PROJECT LEADER: C. CARLSON	DRAWN BY: C. BURRALL
DESIGNED BY: H. SALLS	CHECKED BY: H. SALLS
ABUTMENT TYPICAL	SHEET 26 OF 46



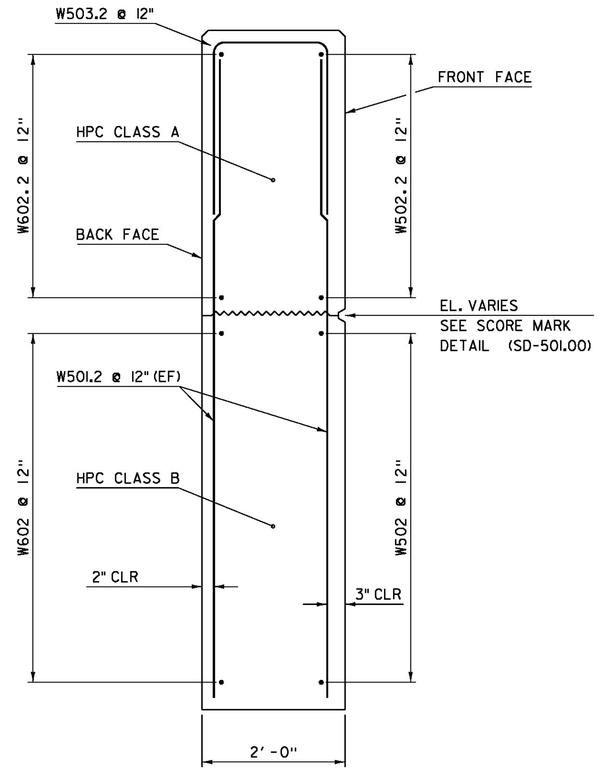
WINGWALLS 2 AND 3 CORNER DETAIL

SCALE 1"=1'-0"



WINGWALLS 1 AND 4 CORNER DETAIL

SCALE 1"=1'-0"



WINGWALL TYPICAL SECTION

SCALE 1"=1'-0"

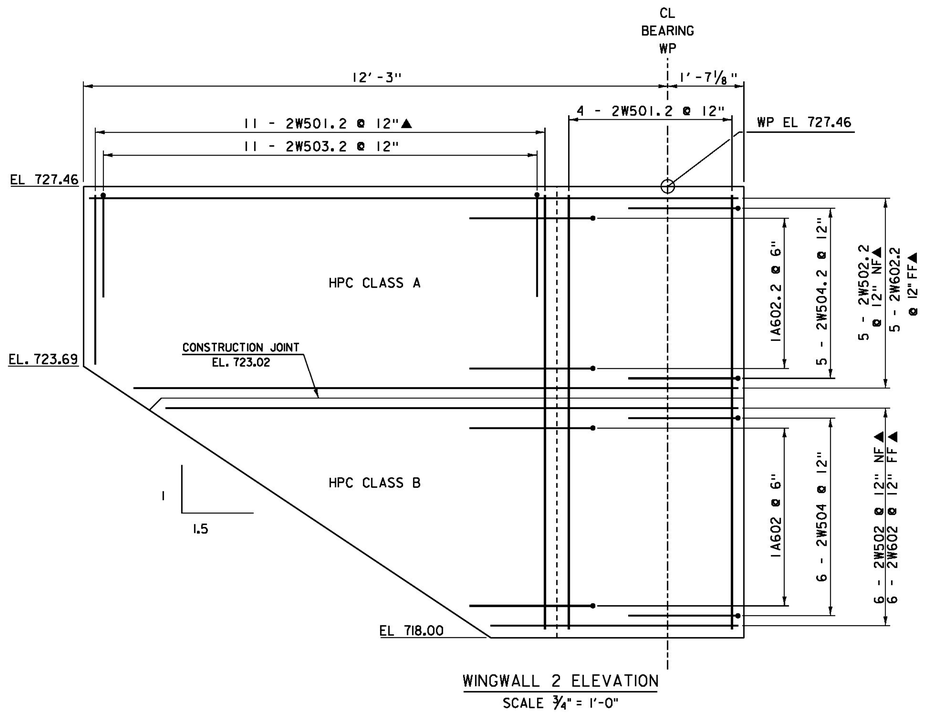
NOTE:

NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD
3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
2'-2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.

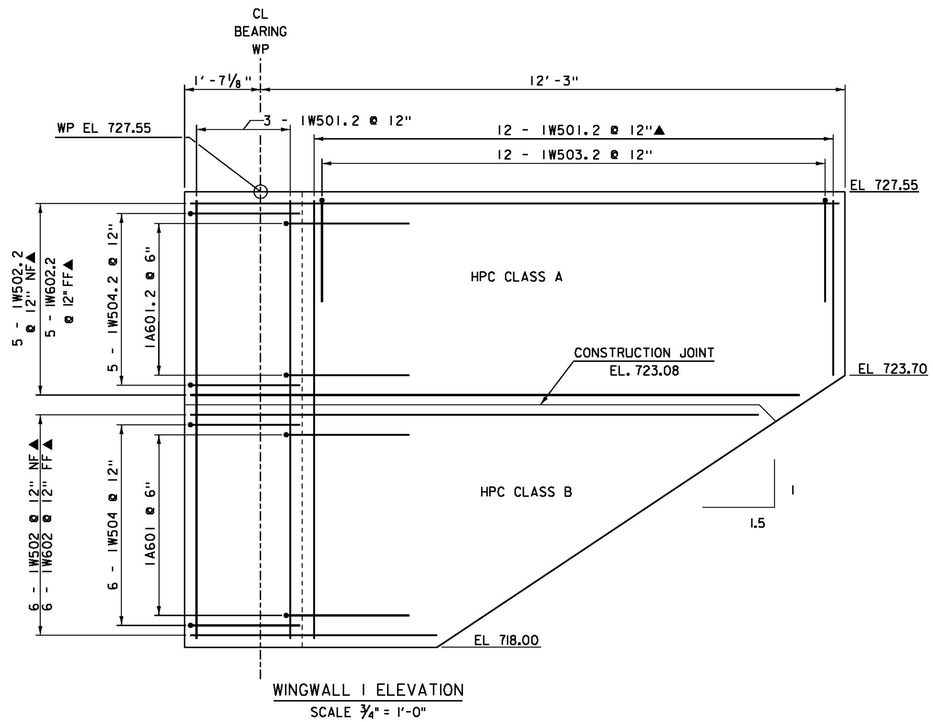
PROJECT NAME: MIDDLESEX
PROJECT NUMBER: BRF 024-1(37)

FILE NAME: s10c220sub.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: H. SALLS
WINGWALL DETAILS

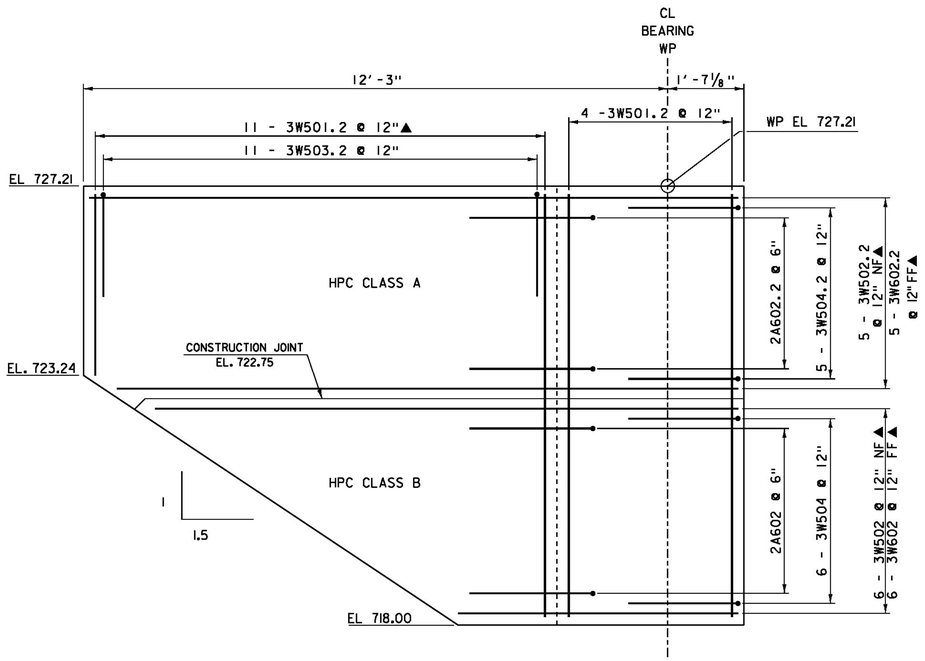
PLOT DATE: 06-FEB-2015
DRAWN BY: C. BURRALL
CHECKED BY: H. SALLS
SHEET 27 OF 46



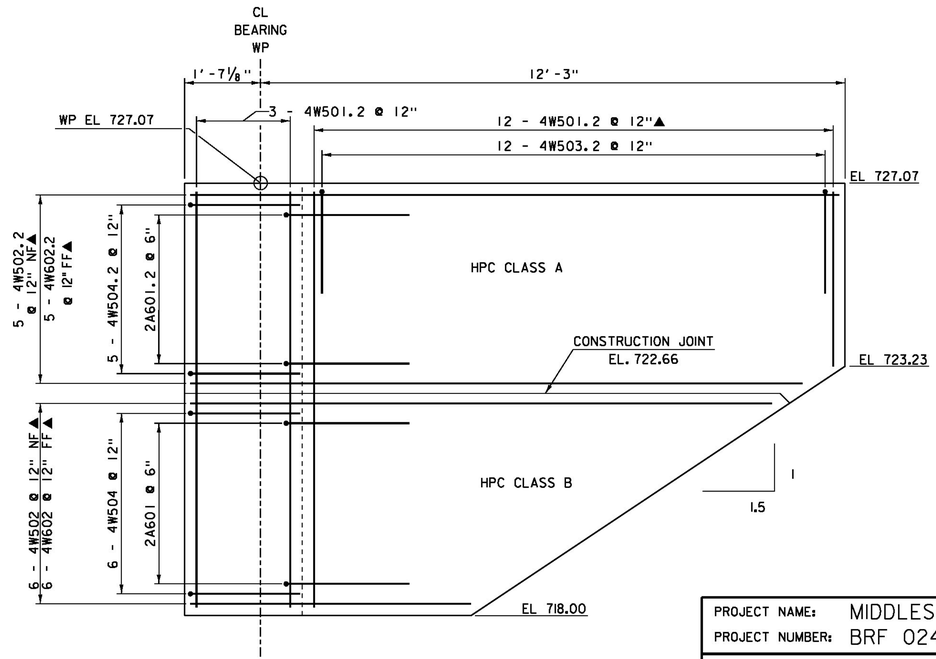
WINGWALL 2 ELEVATION
SCALE ¾" = 1'-0"



WINGWALL 1 ELEVATION
SCALE ¾" = 1'-0"



WINGWALL 3 ELEVATION
SCALE ¾" = 1'-0"



WINGWALL 4 ELEVATION
SCALE ¾" = 1'-0"

NOTE:
NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD
3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
2'-2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.

PROJECT NAME: MIDDLESEX
PROJECT NUMBER: BRF 024-1(37)

FILE NAME: s10c220sub.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: H. SALLS
WINGWALL ELEVATIONS

PLOT DATE: 06-FEB-2015
DRAWN BY: C. BURRALL
CHECKED BY: H. SALLS
SHEET 28 OF 46

STATE OF VERMONT
AGENCY OF TRANSPORTATION

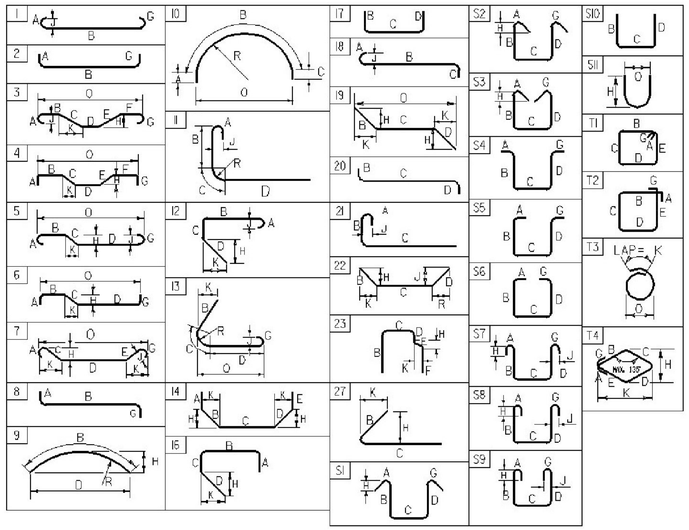
REINFORCING STEEL SCHEDULE

ITEM	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
	DECK																
	83	5	36'- 9"	S501.2	STR	36'- 9"											
✳	21	5	23'- 10"	S502.2	STR	23'- 10"											
	72	5	24'- 3"	S503.2	STR	24'- 3"											
	24	5	24'- 3"	S504.2	STR	24'- 3"											
	20	5	24'- 3"	S505.2	STR	24'- 3"											
	136	5	4'- 8"	S506.2	S5	0'- 6"	0'- 13"	1'- 6"	0'- 13"			0'- 6"					
	83	6	36'- 9"	S601.2	STR	36'- 9"											
✳	21	6	24'- 0"	S602.2	STR	24'- 0"											
	60	6	24'- 5"	S603.2	STR	24'- 5"											
	APPROACH SLAB 1																
✳	24	5	33'- 6"	1AS501	STR	33'- 6"											
✳	40	9	20'- 9"	1AS901	1	1'- 3"	19'- 6"					---		0'- 11"			
△	35	5	3'- 9"	1AS502.2	1	0'- 7"	3'- 2"					---		0'- 5"			
	APPROACH SLAB 2																
	23	5	33'- 6"	2AS501	STR	33'- 6"											
	39	9	20'- 9"	2AS901	1	1'- 3"	19'- 6"					---		0'- 11"			
	33	5	3'- 9"	2AS502.2	1	0'- 7"	3'- 2"					---		0'- 5"			
	ABUTMENT 1																
	28	5	23'- 10"	1A501	STR	23'- 10"											
▲	47	5	7'- 4"	1A502	17		2'- 7"	4'- 9"	---								
	43	5	6'- 11"	1A503	S10		2'- 2"	2'- 7"	2'- 2"								
	10	6	12'- 1"	1A601	19		2'- 7"	9'- 6"	---				2'- 5"		0'- 11"		
	10	6	12'- 1"	1A602	27		2'- 7"	9'- 6"					2'- 5"		0'- 11"		
▲	43	7	7'- 4"	1A702	17		2'- 7"	4'- 9"	---								
	16	5	23'- 10"	1A501.2	STR	23'- 10"											
	47	5	4'- 11"	1A502.2	STR	4'- 11"											
	36	5	14'- 5"	1A504.2	2	11'- 3"	3'- 2"					---					
✳	6	6	12'- 1"	1A601.2	19		2'- 7"	9'- 6"	---				2'- 5"		0'- 11"		
	5	6	12'- 1"	1A602.2	27		2'- 7"	9'- 6"					2'- 5"		0'- 11"		
✳	44	7	7'- 11"	1A702.2	17		2'- 2"	5'- 9"	---								
	WINGWALL 1																
✳ ▲	7	5	13'- 4"	1W502	STR	13'- 4"											
	6	5	5'- 11"	1W504	19		2'- 2"	3'- 9"	---				2'- 0"		0'- 9"		
✳ ▲	7	6	13'- 4"	1W602	STR	13'- 4"											
✳ ▲	16	5	9'- 0"	1W501.2	STR	9'- 0"											
▲	5	5	13'- 4"	1W502.2	STR	13'- 4"											
	12	5	5'- 11"	1W503.2	S10		2'- 2"	1'- 7"	2'- 2"								
	5	5	5'- 11"	1W504.2	19		2'- 2"	3'- 9"	---				2'- 0"		0'- 9"		
▲	5	6	13'- 4"	1W602.2	STR	13'- 4"											
	WINGWALL 2																
▲	6	5	13'- 4"	2W502	STR	13'- 4"											
	6	5	5'- 11"	2W504	27		2'- 2"	3'- 9"					2'- 0"		0'- 9"		
▲	6	6	13'- 4"	2W602	STR	13'- 4"											
▲	15	5	9'- 0"	2W501.2	STR	9'- 0"											
▲	5	5	13'- 4"	2W502.2	STR	13'- 4"											
	11	5	5'- 11"	2W503.2	S10		2'- 2"	1'- 7"	2'- 2"								
	5	5	5'- 11"	2W504.2	27		2'- 2"	3'- 9"					2'- 0"		0'- 9"		
▲	5	6	13'- 4"	2W602.2	STR	13'- 4"											

ITEM	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
	ABUTMENT 2																
	28	5	23'- 10"	2A501	STR	23'- 10"											
▲	47	5	7'- 0"	2A502	17		2'- 7"	4'- 5"	---								
	43	5	6'- 11"	2A503	S10		2'- 2"	2'- 7"	2'- 2"								
	10	6	12'- 1"	2A601	19		2'- 7"	9'- 6"	---						2'- 5"		0'- 11"
	10	6	12'- 1"	2A602	27		2'- 7"	9'- 6"							2'- 5"		0'- 11"
▲	43	7	7'- 0"	2A702	17		2'- 7"	4'- 5"	---								
	16	5	23'- 10"	2A501.2	STR	23'- 10"											
	47	5	4'- 11"	2A502.2	STR	4'- 11"											
	36	5	14'- 5"	2A504.2	2	11'- 3"	3'- 2"					---					
✳	6	6	12'- 1"	2A601.2	19		2'- 7"	9'- 6"	---						2'- 5"		0'- 11"
	5	6	12'- 1"	2A602.2	27		2'- 7"	9'- 6"							2'- 5"		0'- 11"
✳	44	7	7'- 11"	2A702.2	17		2'- 2"	5'- 9"	---								
	WINGWALL 3																
✳ ▲	7	5	13'- 4"	3W502	STR	13'- 4"											
	6	5	5'- 11"	3W504	27		2'- 2"	3'- 9"							2'- 0"		0'- 9"
✳ ▲	7	6	13'- 4"	3W602	STR	13'- 4"											
✳ ▲	16	5	8'- 9"	3W501.2	STR	8'- 9"											
▲	5	5	13'- 4"	3W502.2	STR	13'- 4"											
	11	5	5'- 11"	3W503.2	S10		2'- 2"	1'- 7"	2'- 2"								
	5	5	5'- 11"	3W504.2	27		2'- 2"	3'- 9"							2'- 0"		0'- 9"
▲	5	6	13'- 4"	3W602.2	STR	13'- 4"											
	WINGWALL 4																
▲	6	5	13'- 4"	4W502	STR	13'- 4"											
	6	5	5'- 11"	4W504	19		2'- 2"	3'- 9"	---						2'- 0"		0'- 9"
▲	6	6	13'- 4"	4W602	STR	13'- 4"											
▲	15	5	8'- 7"	4W501.2	STR	8'- 7"											
▲	5	5	13'- 4"	4W502.2	STR	13'- 4"											
	11	5	5'- 11"	4W503.2	S10		2'- 2"	1'- 7"	2'- 2"								
	5	5	5'- 11"	4W504.2	19		2'- 2"	3'- 9"	---						2'- 0"		0'- 9"
▲	5	6	13'- 4"	4W602.2	STR	13'- 4"											

~ NOTES ~

1. UNLESS OTHERWISE DESIGNATED, ALL BAR REINFORCEMENT FOR CONCRETE IN SIZES UP TO AND INCLUDING NO. 18 SHALL CONFORM TO THE REQUIREMENTS OF THE "SPECIFICATIONS FOR DEFORMED BILLET-STEEL BARS FOR CONCRETE REINFORCEMENT", AASHTO M 31 (ASTM A 615-SI). ALL BARS SHALL BE GRADE 60, UNLESS OTHERWISE DESIGNATED.
2. FOR TYPICAL BENDING DETAILS, RECOMMENDED PIN DIAMETER "D" OF BENDS AND HOOKS, AND OTHER STANDARD PRACTICE, SEE CURRENT CONCRETE REINFORCING STEEL INSTITUTE "MANUAL OF STANDARD PRACTICE".
3. BARS WHICH REQUIRE MORE ACCURATE BENDING THAN STANDARD PRACTICES SHOULD HAVE LIMITS INDICATED.
4. ALL DIMENSIONS ARE OUT TO OUT OF BAR EXCEPT "A" AND "G" ON STANDARD 180 DEGREE AND 135 DEGREE HOOKS.
5. "J" DIMENSION ON 180 DEGREE HOOKS TO BE SHOWN ONLY WHERE NECESSARY TO RESTRICT HOOK SIZE. OTHERWISE, STANDARD HOOKS ARE TO BE USED.
6. "H" DIMENSION ON STIRRUPS TO BE SHOWN ONLY WHEN NECESSARY TO MAINTAIN CLEARANCES.
7. WHERE SLOPE DIFFERS FROM 45 DEGREES, DIMENSIONS "H" AND "K" MUST BE SHOWN.
8. ▲ DENOTES BARS TO BE CUT IN FIELD.
9. ✳ DENOTES ONE EXTRA BAR ADDED FOR TESTING PURPOSES.
10. △ DENOTES TWO EXTRA BARS ADDED FOR TESTING PURPOSES.
11. E IN BAR MARK PREFIX DENOTES EPOXY COATED REINFORCING STEEL.



ASTM STANDARD REINFORCING BARS

#3	0.376	0.375	0.11	1.178
#4	0.668	0.500	0.20	1.571
#5	1.043	0.625	0.31	1.963
#6	1.502	0.750	0.44	2.356
#7	2.04	0.875	0.60	2.749
#8	2.670	1.000	0.79	3.14
#9	3.400	1.13	1.00	3.54
#10	4.3	1.270	1.27	3.990
#11	5.31	1.410	1.56	4.430
#14	7.65	1.69	2.25	5.32
#18	13.60	2.26	4.00	7.09

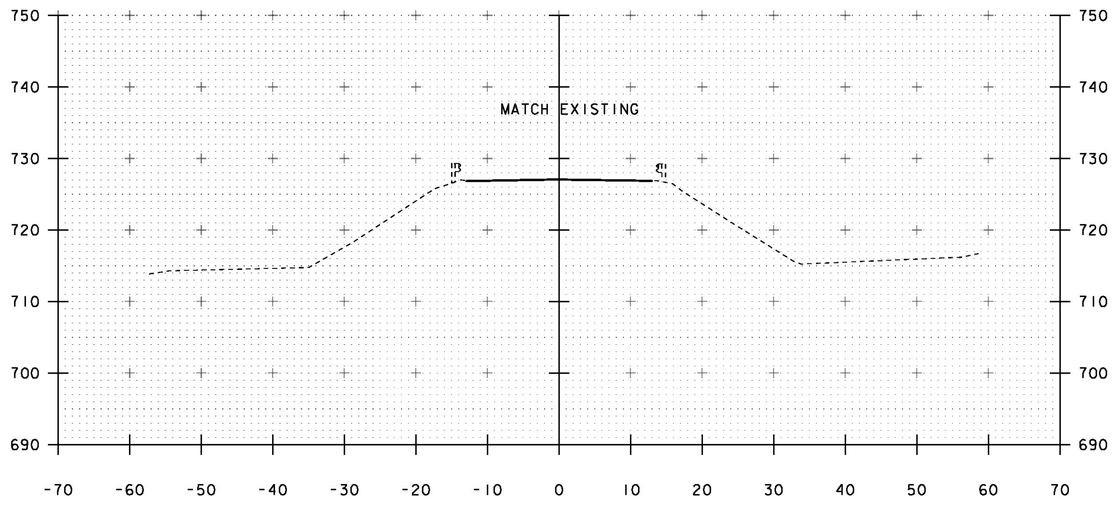
~ REINFORCING STEEL CORROSION RESISTANCE LEVEL ~

THE REINFORCING STEEL MARKS IN THIS SCHEDULE INDICATE THE REQUIRED BAR CORROSION RESISTANCE LEVEL. CORROSION RESISTANCE LEVEL IS DENOTED WITH A ,2 FOR LEVEL TWO SUFFIX OR ,3 FOR LEVEL THREE SUFFIX, ,1 FOR LEVEL ONE IS TO BE OMITTED. THE BAR MATERIAL TYPE AND BAR STEEL GRADE PROVIDED FOR EACH CORROSION LEVEL WILL BE RECORDED ON THE PLAN SET PI SHEET FOR AS-BUILT RECORD PLAN ARCHIVES.

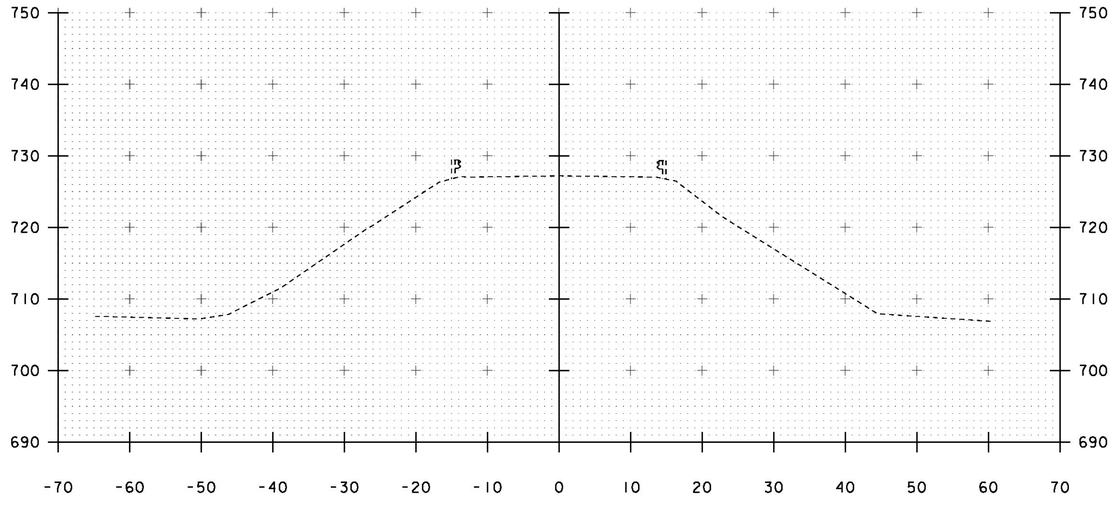
PROJECT NAME: **MIDDLESEX**
PROJECT NUMBER: **BRF 024-1(37)**

FILE NAME: **s10c220rss.xls**
PROJECT MANAGER: **C. CARLSON**
DESIGNED BY: **H. SALLS**
REINFORCING STEEL SCHEDULE

PLOT DATE: **1/13/2015**
DRAWN BY: **C. BURRALL**
CHECKED BY: **H. SALLS**
SHEET **29** OF **46**



26+75
BEGIN APPROACH



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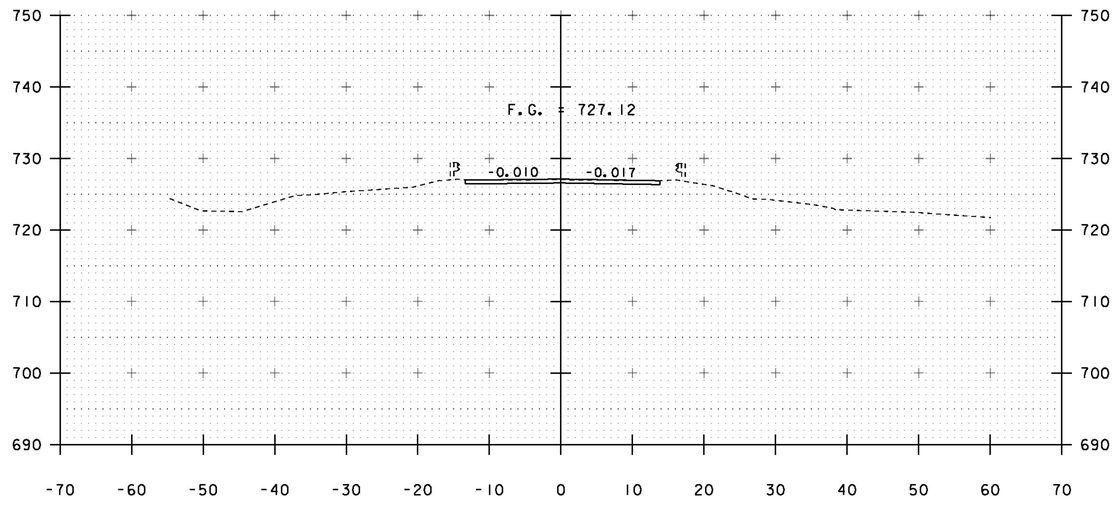

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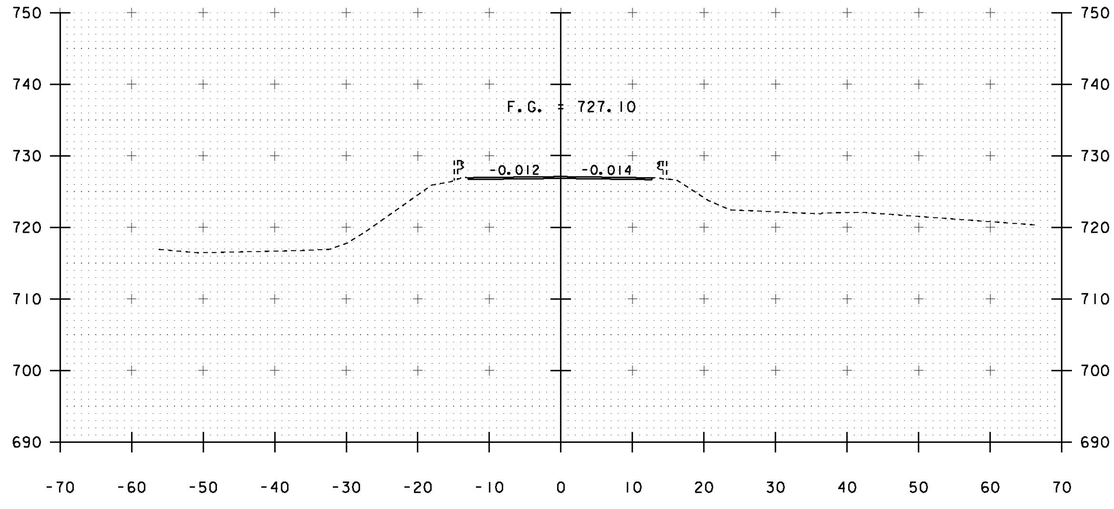


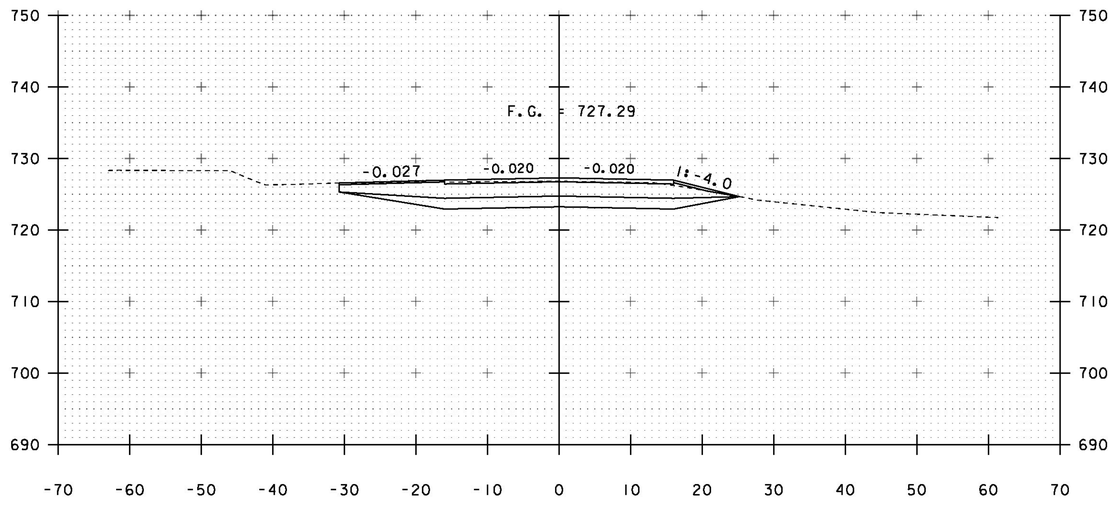
27+00

STA. 26+50 TO STA. 27+25

PROJECT NAME: MIDDLESEX
PROJECT NUMBER: BRF 024-1(37)

FILE NAME: s10c220xs.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: H. SALLS
VT 12 CROSS SECTIONS 1

PLOT DATE: 13-JAN-2015
DRAWN BY: R. PELLETT
CHECKED BY: H. SALLS
SHEET 30 OF 46



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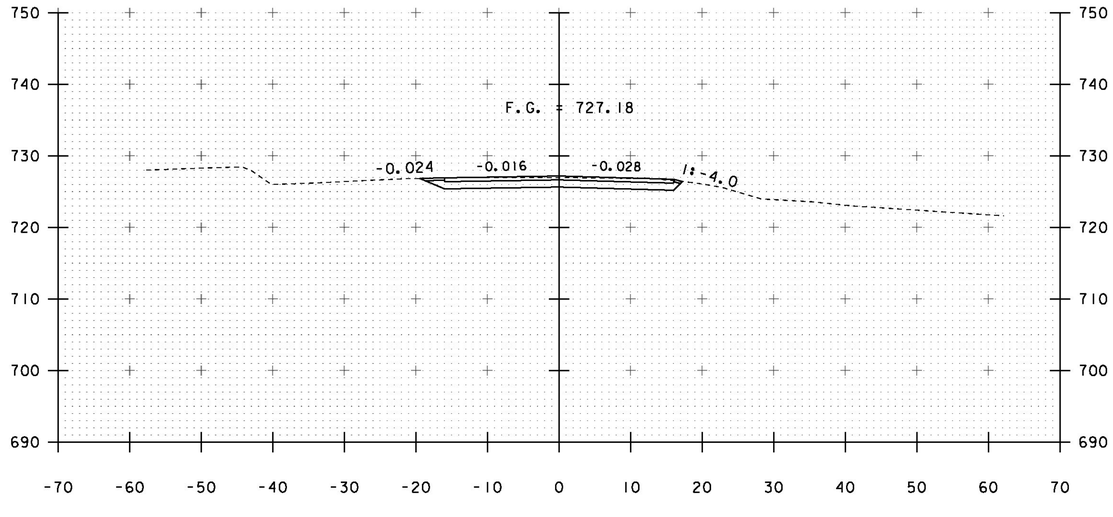

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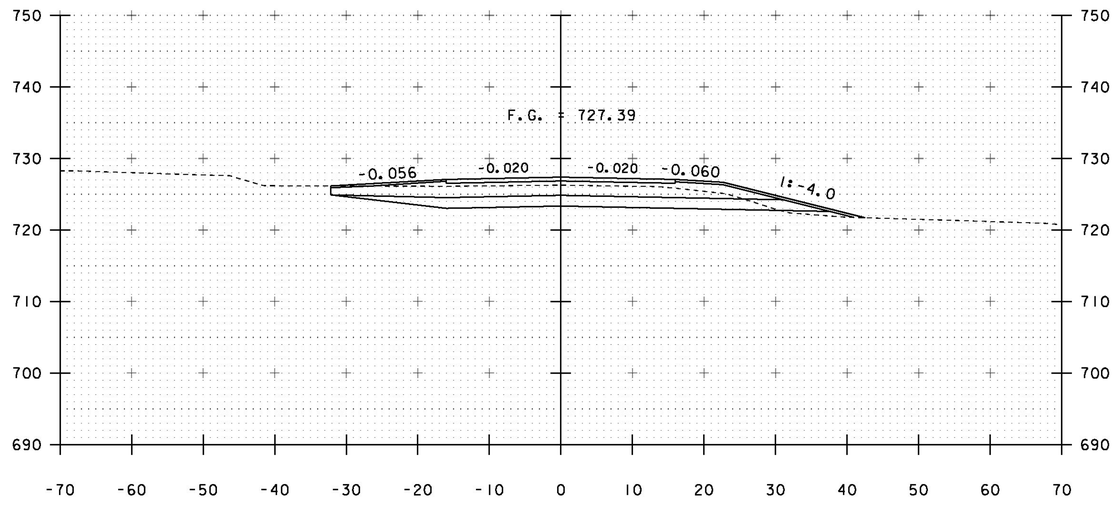
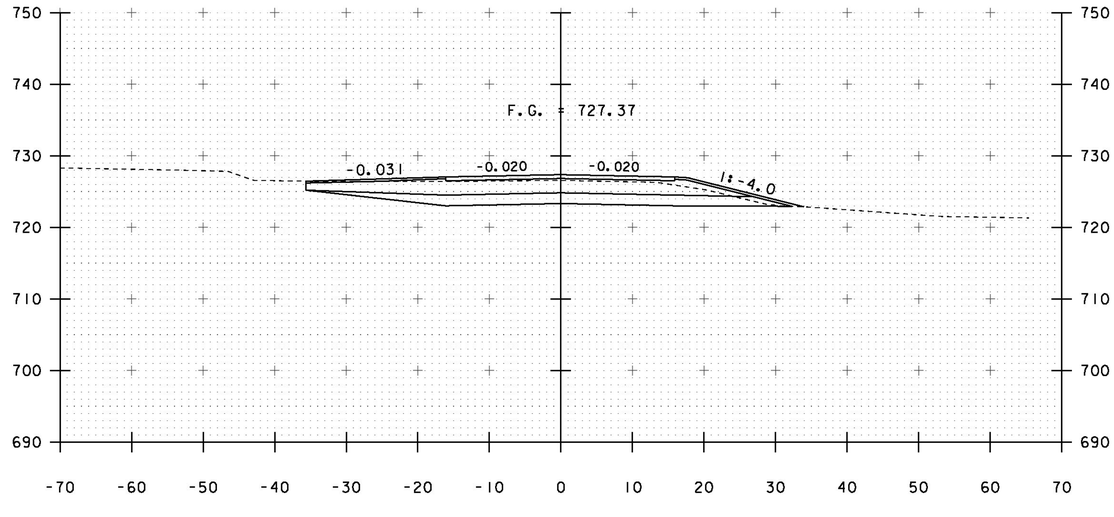


28+25



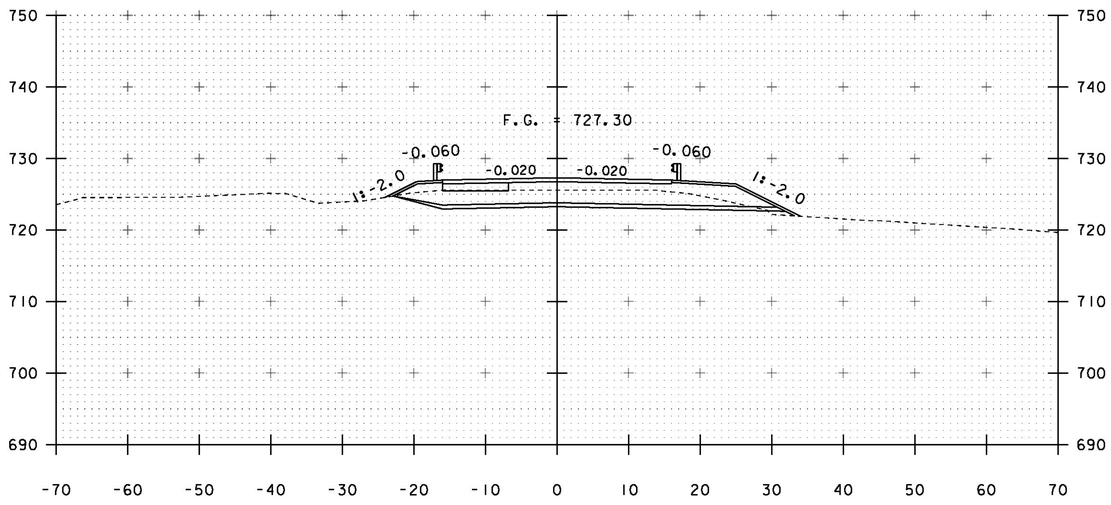
28+00

STA. 27+50 TO STA. 28+25

PROJECT NAME: MIDDLESEX
PROJECT NUMBER: BRF 024-1(37)

FILE NAME: s10c220xs.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: H. SALLS
VT 12 CROSS SECTIONS 2

PLOT DATE: 13-JAN-2015
DRAWN BY: R. PELLETT
CHECKED BY: H. SALLS
SHEET 31 OF 46



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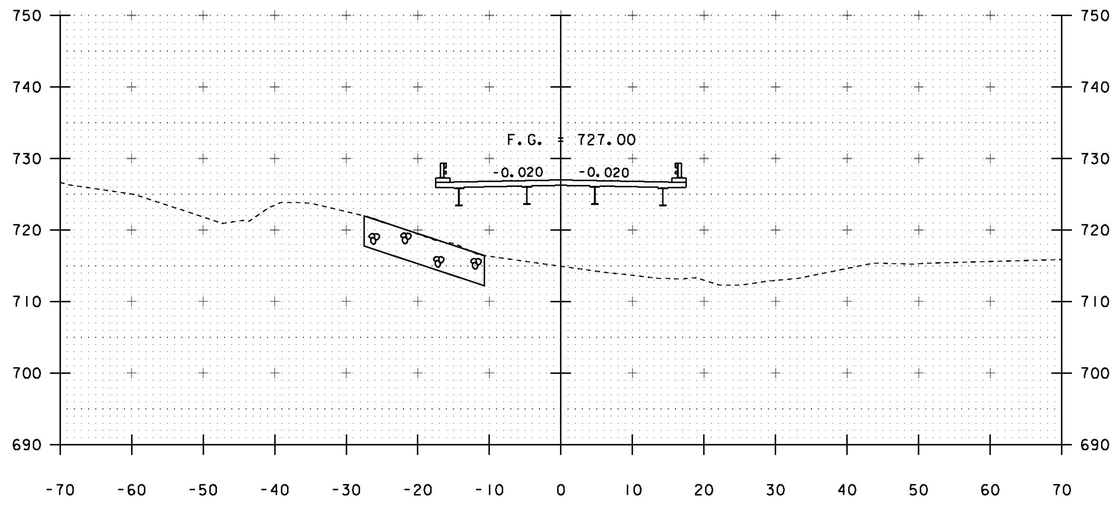

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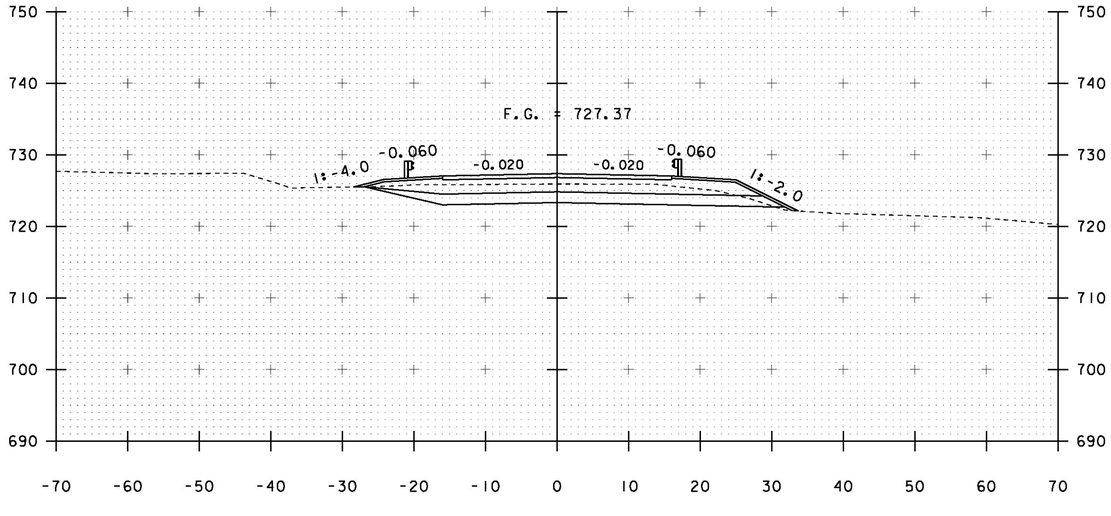

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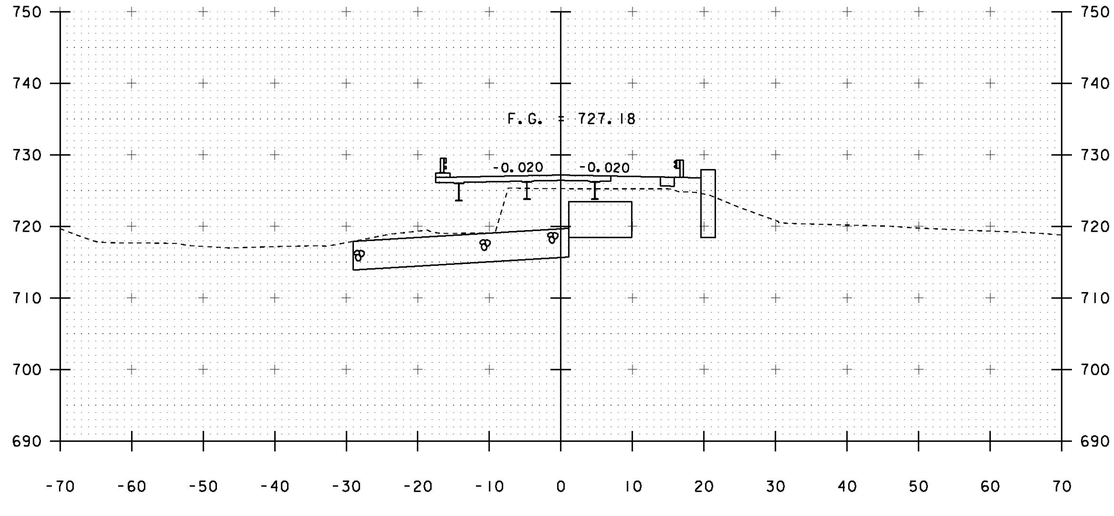


29+00

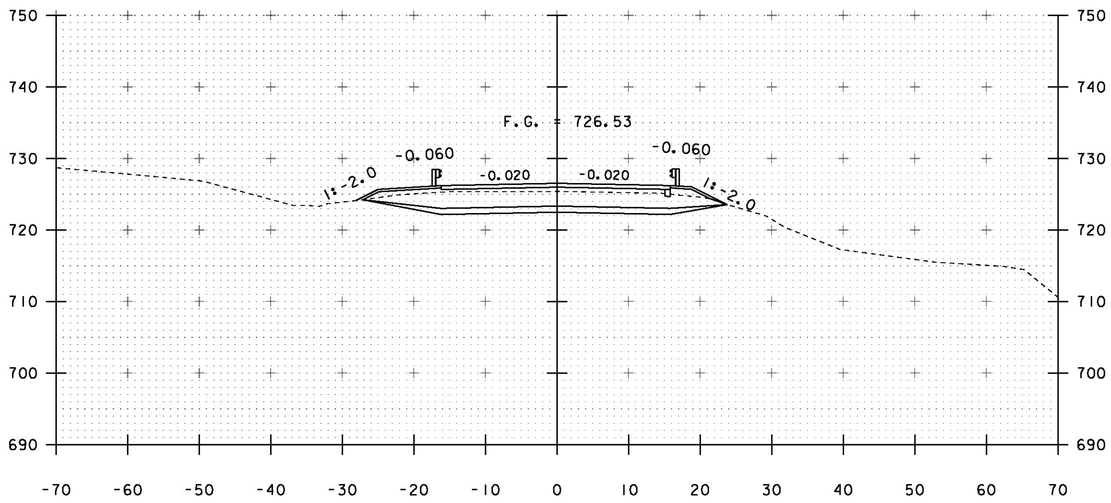
BEGIN BRIDGE STA 28+97.11

STA. 28+50 TO STA. 29+25

PROJECT NAME: MIDDLESEX
PROJECT NUMBER: BRF 024-1(37)

FILE NAME: s10c220xs.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: H. SALLS
VT 12 CROSS SECTIONS 3

PLOT DATE: 13-JAN-2015
DRAWN BY: R. PELLETT
CHECKED BY: H. SALLS
SHEET 32 OF 46



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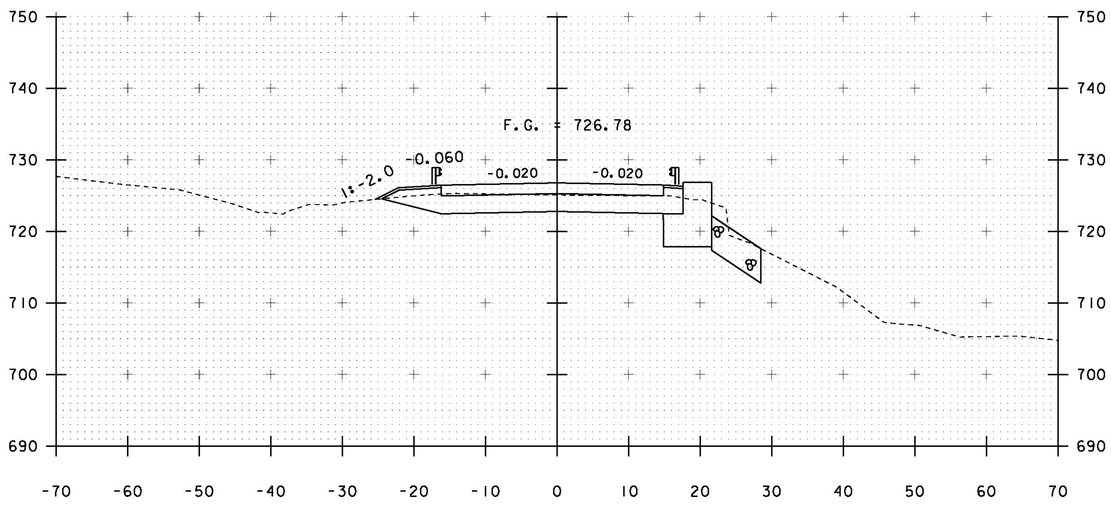
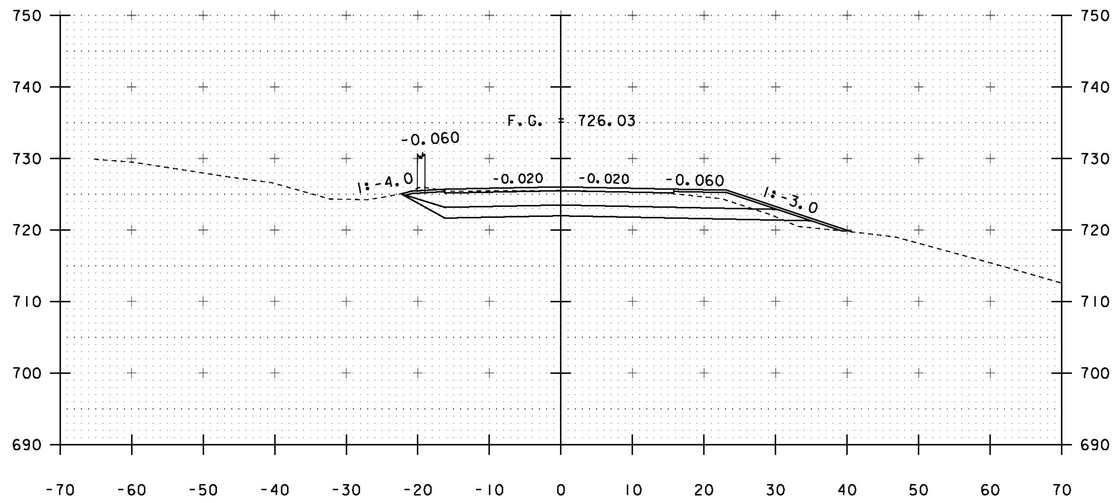
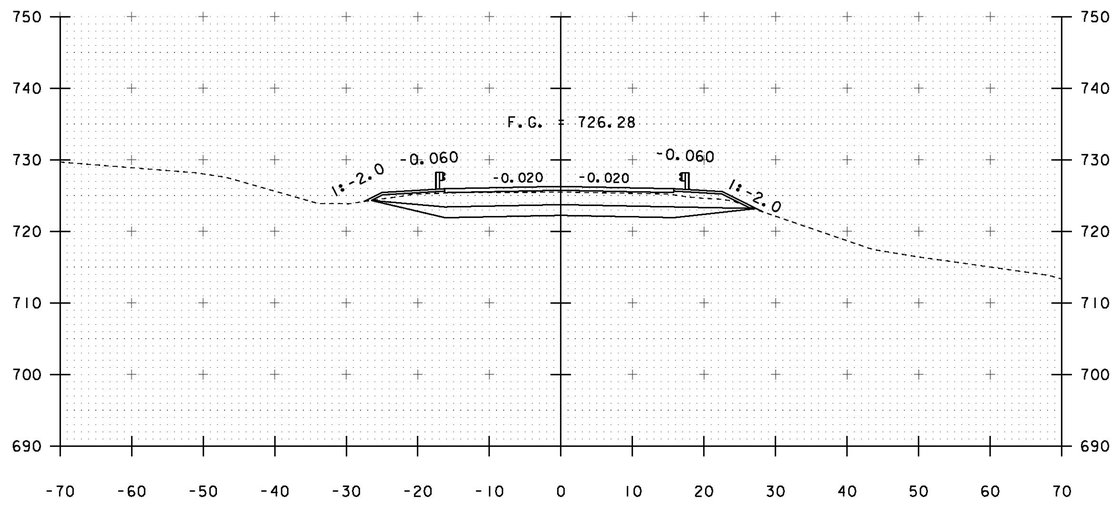


29+50
END BRIDGE STA 29+43.89



30+25



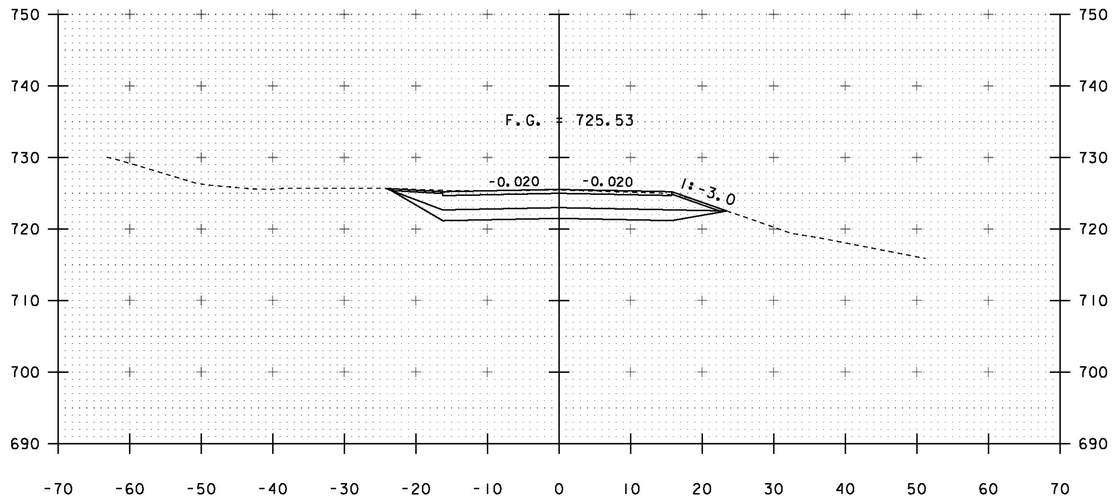
30+00

STA. 29+50 TO STA. 30+25

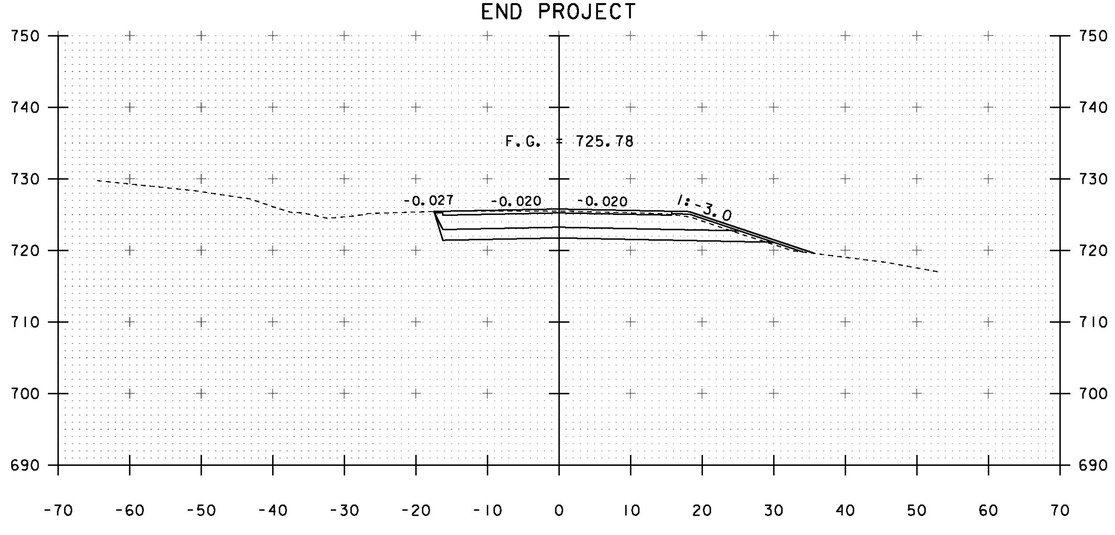
PROJECT NAME: MIDDLESEX
PROJECT NUMBER: BRF 024-1(37)

FILE NAME: s10c220xs.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: H. SALLS
VT 12 CROSS SECTIONS 4

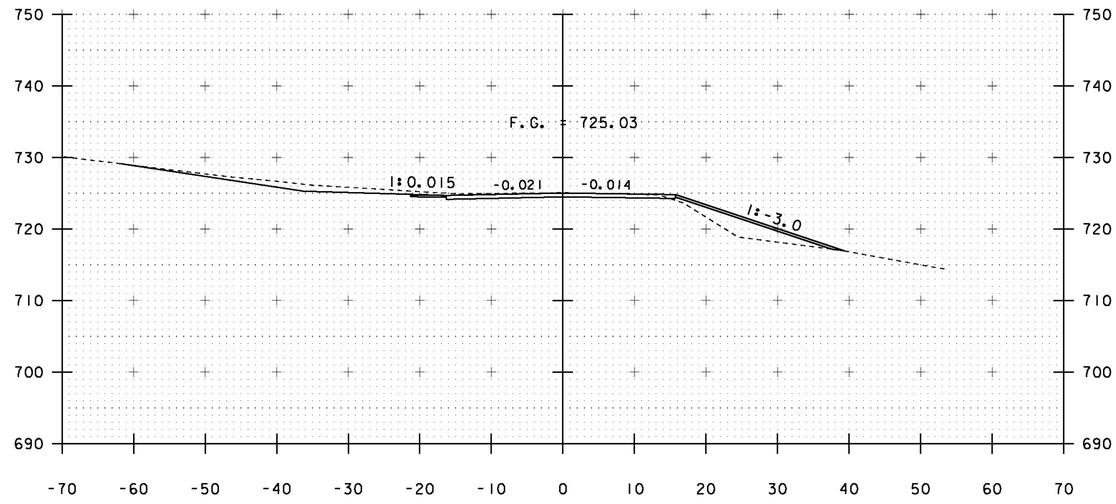
PLOT DATE: 13-JAN-2015
DRAWN BY: R. PELLETT
CHECKED BY: H. SALLS
SHEET 33 OF 46



30+75
END PROJECT



30+50



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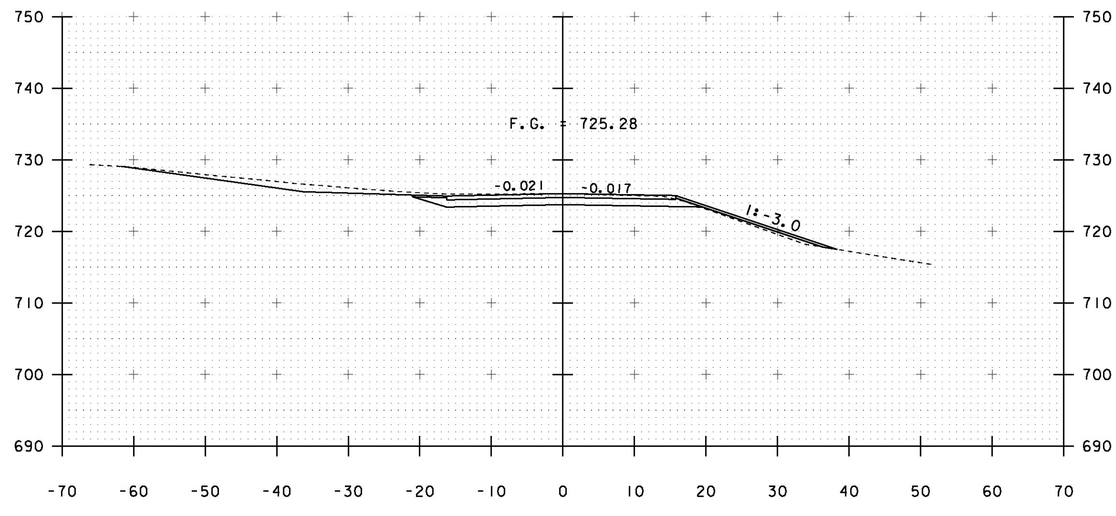


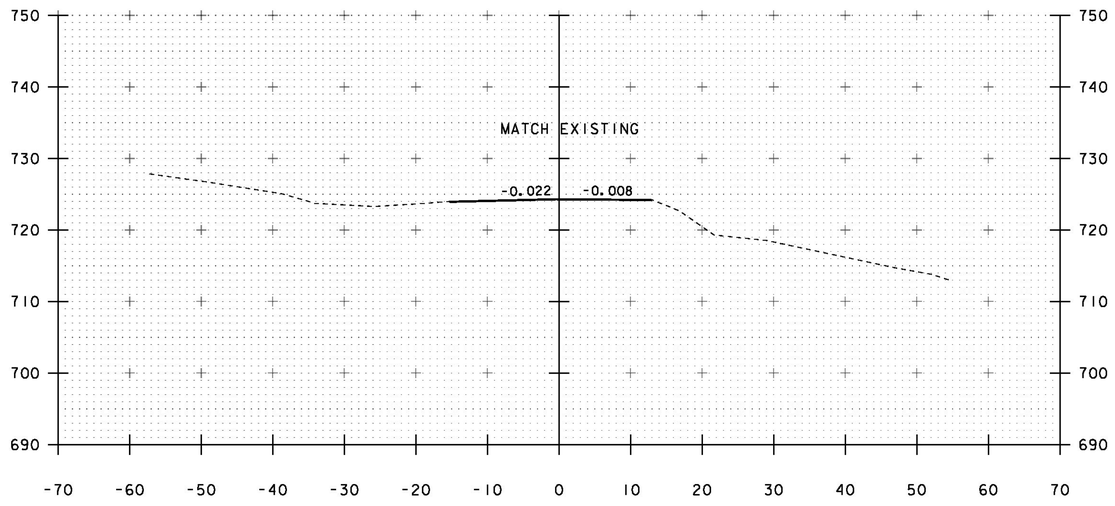
31+00

STA. 30+50 TO STA. 31+25

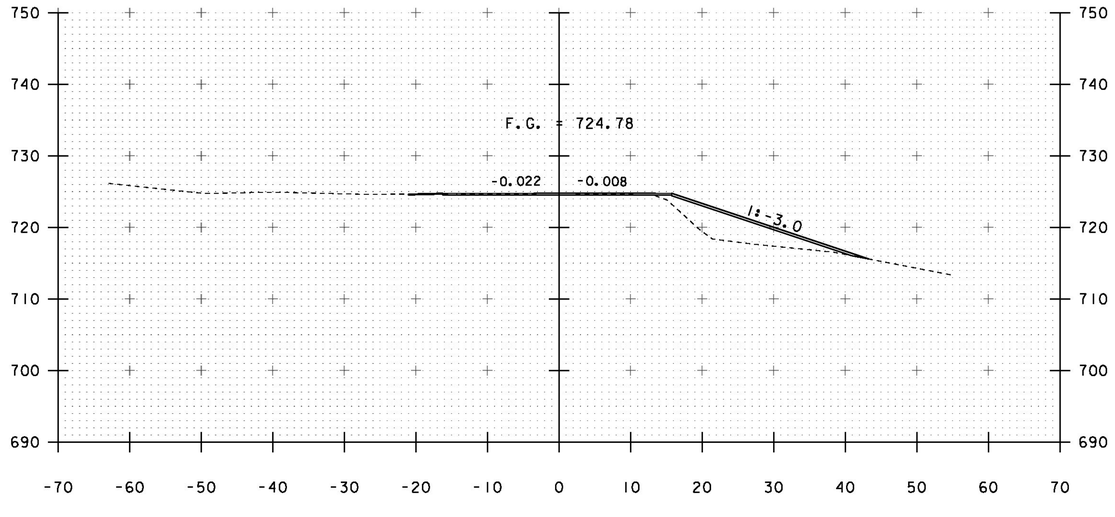
PROJECT NAME: MIDDLESEX
PROJECT NUMBER: BRF 024-1(37)

FILE NAME: s10c220xs.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: H. SALLS
VT 12 CROSS SECTIONS 5

PLOT DATE: 13-JAN-2015
DRAWN BY: R. PELLETT
CHECKED BY: H. SALLS
SHEET 34 OF 46



31+75
END APPROACH



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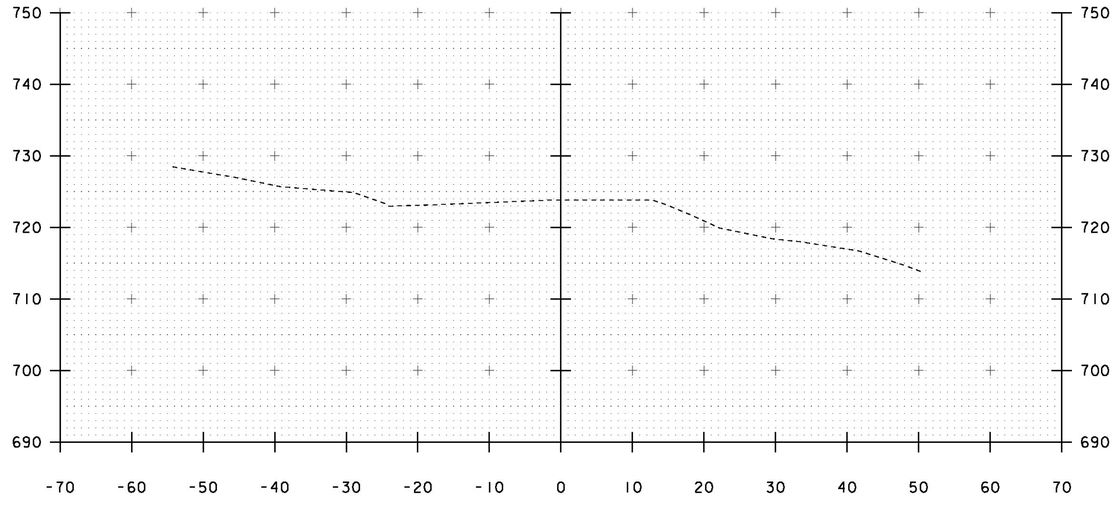


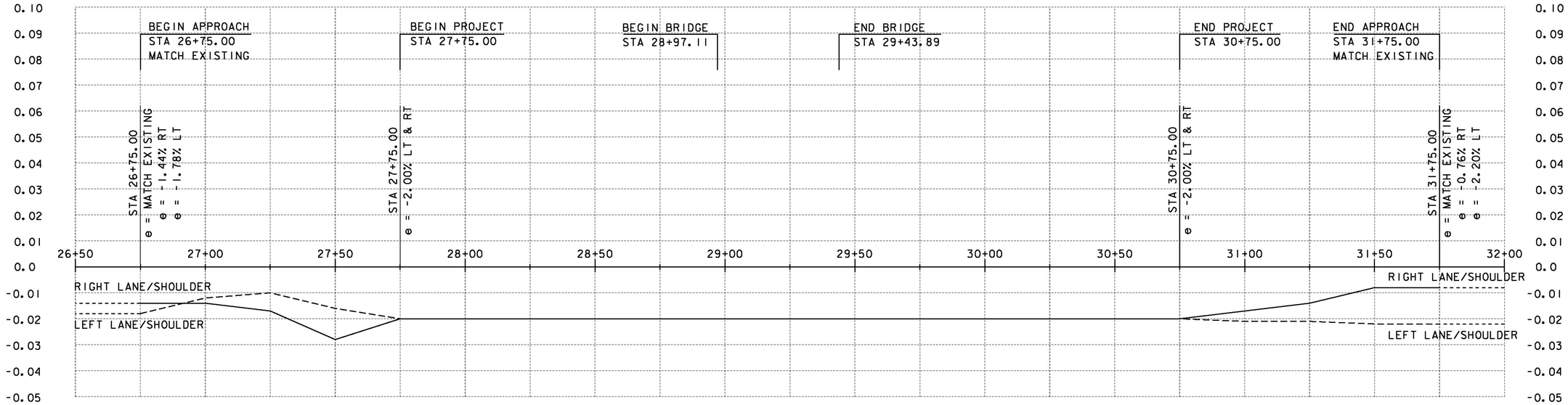
32+00

STA. 31+50 TO STA. 32+00

PROJECT NAME: MIDDLESEX
PROJECT NUMBER: BRF 024-1(37)

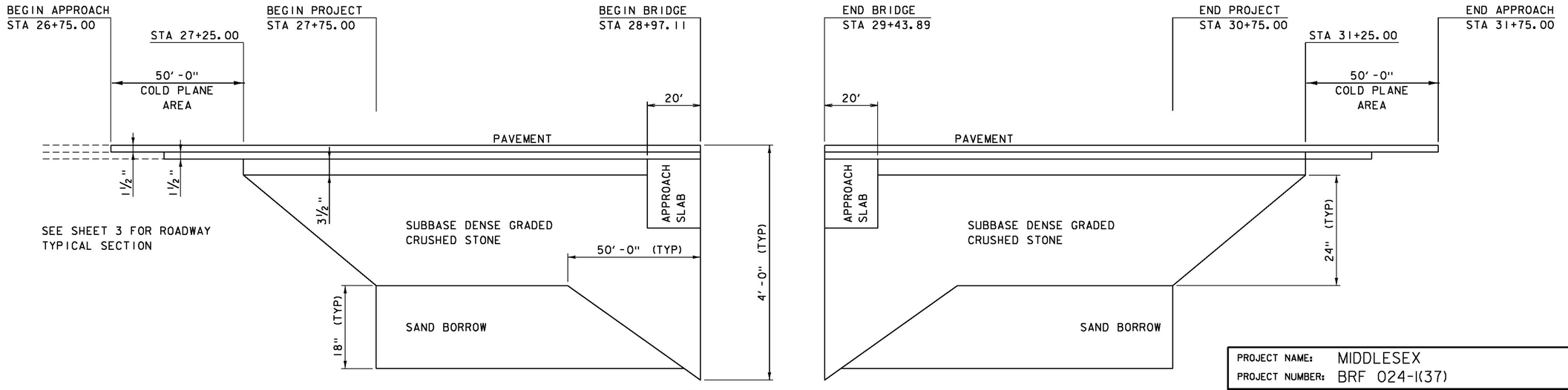
FILE NAME: s10c220xs.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: H. SALLS
VT 12 CROSS SECTIONS 6

PLOT DATE: 13-JAN-2015
DRAWN BY: R. PELLETT
CHECKED BY: H. SALLS
SHEET 35 OF 46



BANKING DIAGRAM

HOR. SCALE 1" = 20'-0"
NO VERT. SCALE



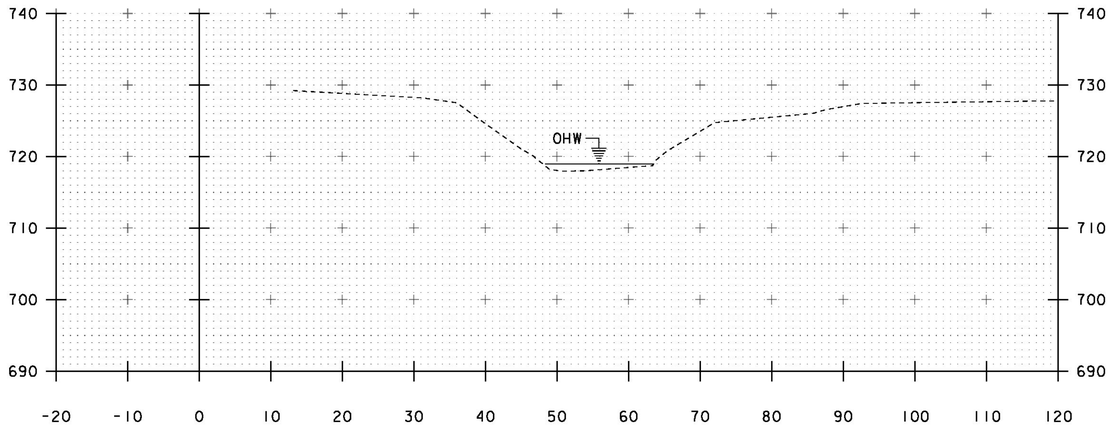
MATERIAL TRANSITION

HOR. SCALE 1" = 20'-0"
NO VERT. SCALE

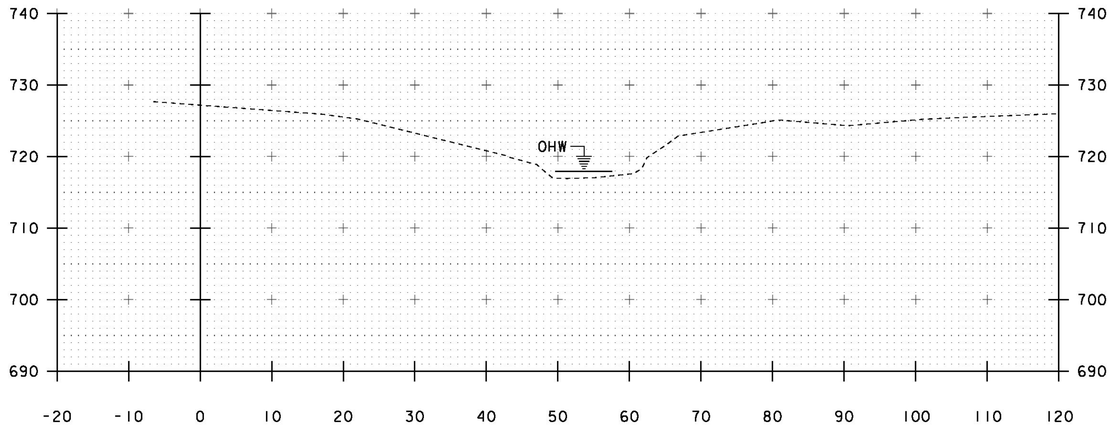
PROJECT NAME: MIDDLESEX
PROJECT NUMBER: BRF 024-1(37)

FILE NAME: s10c220xs.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: H. SALLS
BANKING & MATERIAL TRANSITION

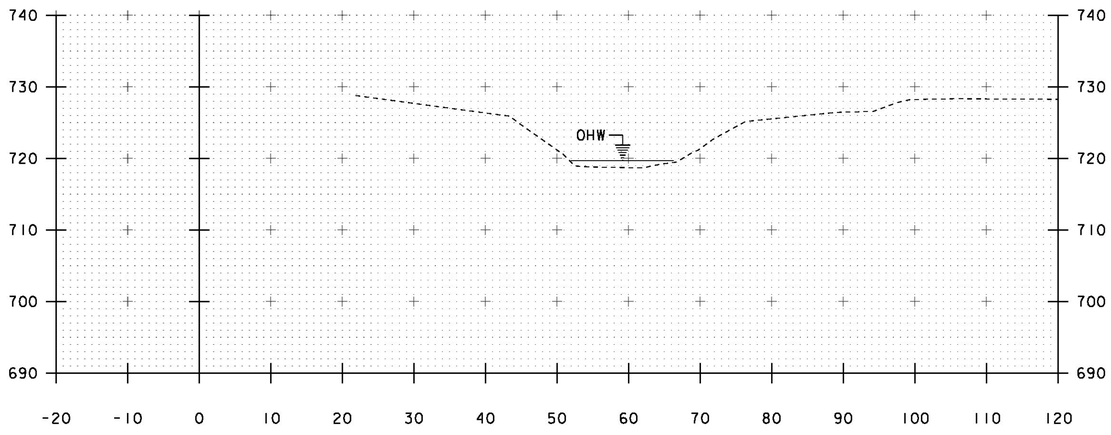
PLOT DATE: 13-JAN-2015
DRAWN BY: R. PELLETT
CHECKED BY: H. SALLS
SHEET 36 OF 46



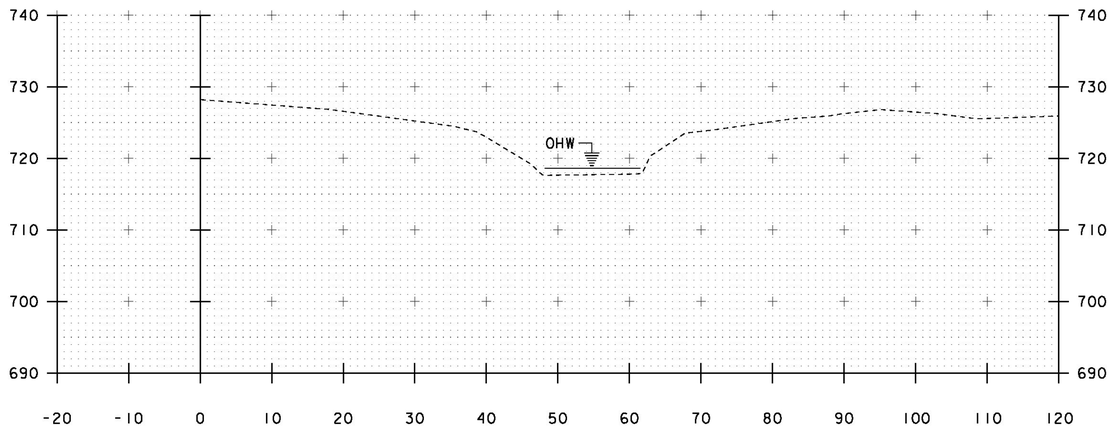
100+50



100+80



100+25



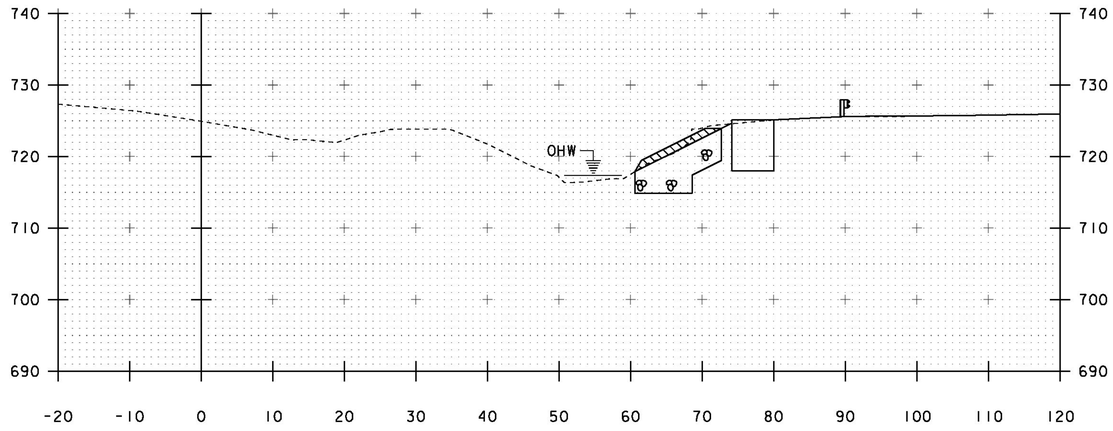
100+70

STA. 100+25 TO STA. 100+80

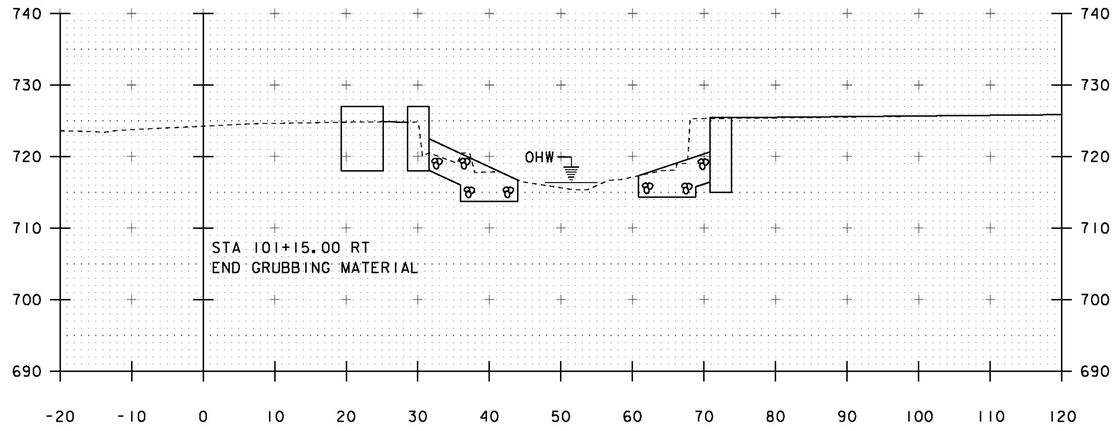
PROJECT NAME: MIDDLESEX
PROJECT NUMBER: BRF 024-1(37)

FILE NAME: s10c220xs.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: H. SALLS
CHANNEL CROSS SECTIONS 1

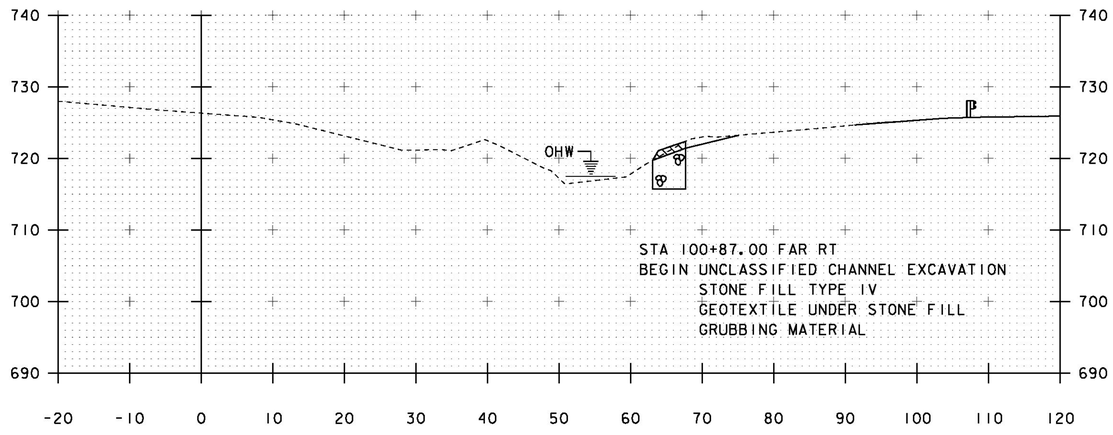
PLOT DATE: 13-JAN-2015
DRAWN BY: R. PELLETT
CHECKED BY: H. SALLS
SHEET 37 OF 46



101+00



101+20



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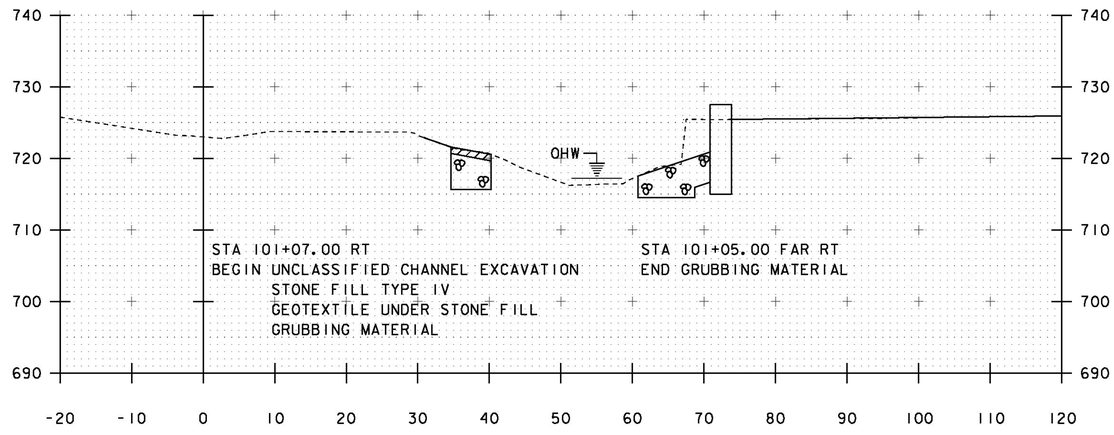


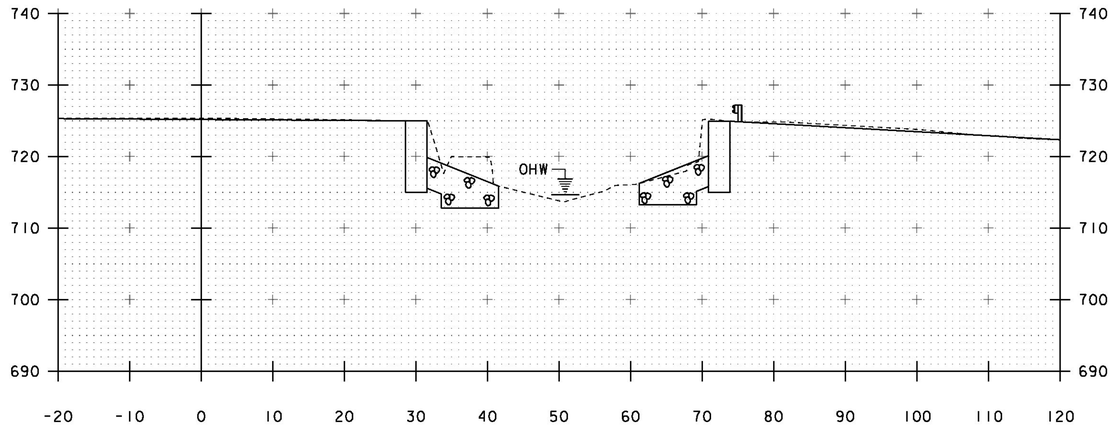
101+10

STA. 100+90 TO STA. 101+20

PROJECT NAME: MIDDLESEX
PROJECT NUMBER: BRF 024-1(37)

FILE NAME: s10c220xs.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: H. SALLS
CHANNEL CROSS SECTIONS 2

PLOT DATE: 13-JAN-2015
DRAWN BY: R. PELLETT
CHECKED BY: H. SALLS
SHEET 38 OF 46



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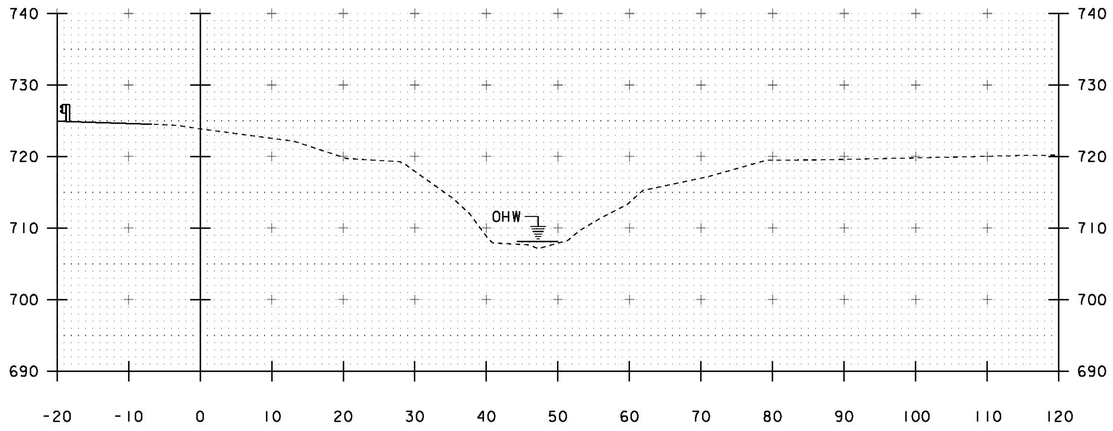
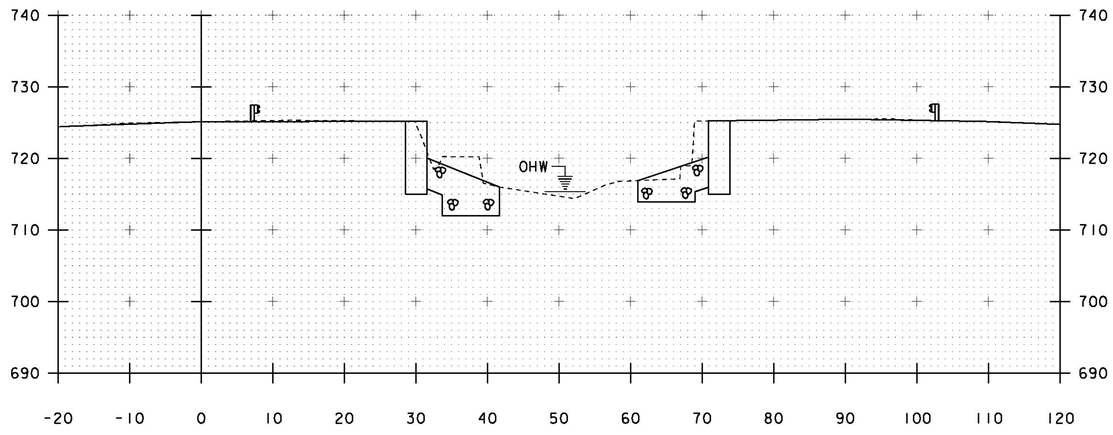
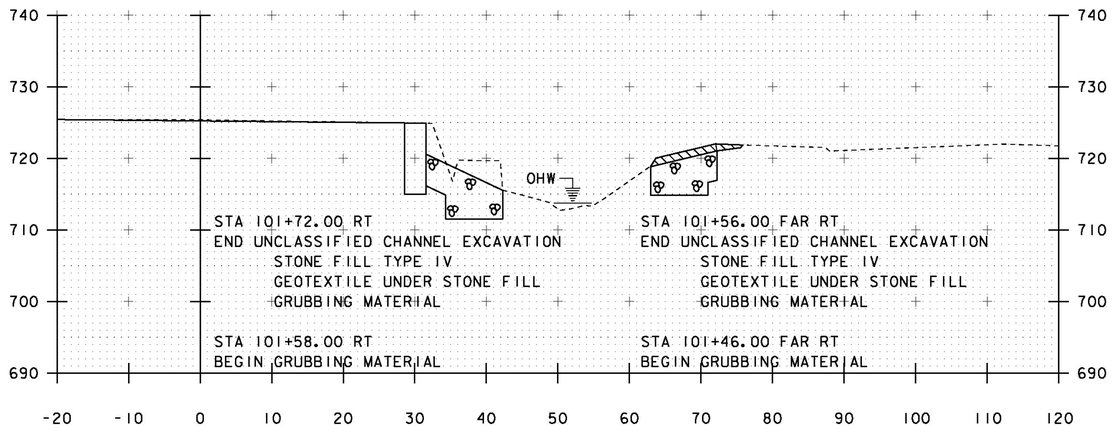


101+75



101+30



101+50

STA. 101+30 TO STA. 101+75

PROJECT NAME: MIDDLESEX
PROJECT NUMBER: BRF 024-1(37)

FILE NAME: s10c220xs.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: H. SALLS
CHANNEL CROSS SECTIONS 3

PLOT DATE: 13-JAN-2015
DRAWN BY: R. PELLETT
CHECKED BY: H. SALLS
SHEET 39 OF 46

EPSC PLAN NARRATIVE

1.1 PROJECT DESCRIPTION

THIS PROJECT INVOLVES THE REMOVAL OF EXISTING BRIDGE 77, WHICH WILL BE REPLACED WITH A CONCRETE DECK & STEEL BEAM SUPERSTRUCTURE SPANNING 46.78 FEET OVER UNNAMED BROOK, ON NEW ABUTMENTS ALONG THE SAME ALIGNMENT, INCLUDING RELATED APPROACH AND CHANNEL WORK. BRIDGE 77 IS LOCATED IN THE TOWN OF MIDDLESEX, ON VT ROUTE 12, APPROXIMATELY AT THE INTERSECTIONS OF VT ROUTE 12 AND TOWN HIGHWAY 18.

NOTE: AREA OF DISTURBANCE INCLUDES LIMITS OF EARTH DISTURBANCE WITHIN THE PROJECT AREA, AS WELL AS WASTE, BORROW AND STAGING AREAS, AND OTHER EARTH DISTURBING ACTIVITIES WITHIN OR DIRECTLY ADJACENT TO THE PROJECT LIMITS AS SHOWN ON THE ATTACHED EPSC PLAN.

TOTAL AREA OF DISTURBANCE AS SHOWN ON THE ATTACHED EPSC PLAN IS APPROXIMATELY 0.63 ACRES.

IT IS ANTICIPATED THAT THIS PROJECT WILL LAST ONE CONSTRUCTION SEASON.

1.2 SITE INVENTORY

1.2.1 TOPOGRAPHY

THE TOPOGRAPHY OF THE AREA IS A SADDLE THAT IS MOSTLY WELL ESTABLISHED FOREST. VT ROUTE 12, AN UNNAMED BROOK, AND ROAD (TH 18) ARE WITHIN THE PROJECT SITE.

1.2.2 DRAINAGE, WATERWAYS, BODIES OF WATER, AND PROXIMITY TO NATURAL OR MAN-MADE WATER FEATURES

THE BROOK IS THE ONLY WATER SOURCE ON THE PROJECT SITE. THE BROOK IS CLASSIFIED AS STEEP, ALLUVIAL WITH COARSE GRAVEL, COBBLES AND BOULDERS. THE TRIBUTARY AREA AT THE BRIDGE IS 1.0 $MILE^2$. DUE TO THE NATURE OF THE SURROUNDING TERRAIN THE PROJECT SITE COULD RECEIVE RUNOFF WATER FROM A FEW NEARBY SLOPES.

1.2.3 VEGETATION

THE VEGETATION IN THE PROJECT AREA CONSISTS OF HARDWOOD TREES AND UNDERGROWTH. THE IMPACT TO VEGETATION WILL BE LIMITED TO THAT WHICH IS DIRECTLY AFFECTED BY REPLACEMENT OF THE EXISTING BRIDGE. UPON PROJECT COMPLETION, THE CHANNEL WILL BE ARMORED WITH STONE FILL TYPE IV AS SPECIFIED ON THE PLANS. DISTURBED VEGETATION WILL BE REESTABLISHED WITH STANDARD SEED AND MULCH PRACTICES.

1.2.4 SOILS

ALL SOIL DATA CAME FROM THE U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE FOR THE COUNTY OF WINDSOR, VERMONT. SOILS ON THE PROJECT SITE ARE BUXON SILT LOAM, 25% TO 45% SLOPES, "K FACTOR" = 0.32 AND COLONEL FINE SANDY LOAM, 8% TO 15% SLOPES, "K FACTOR" = 0.20. THE SOILS ARE CONSIDERED MODERATELY ERODIBLE DUE TO SIGNIFICANT SLOPES.

NOTE: K-VALUES GENERALLY INDICATE THE FOLLOWING:
0.0-0.23 = LOW EROSION POTENTIAL
0.24-0.36 = MODERATE EROSION POTENTIAL
0.37 AND HIGHER = HIGH EROSION POTENTIAL

1.2.5 SENSITIVE RESOURCE AREAS

CRITICAL HABITATS: NO
HISTORICAL OR ARCHEOLOGICAL AREAS: NO
PRIME AGRICULTURAL LAND: NO
THREATENED AND ENDANGERED SPECIES: NO
WATER RESOURCE: BROOK
WETLANDS: NO

1.3 RISK EVALUATION

THIS PROJECT DOES NOT FALL UNDER THE JURISDICTION OF GENERAL PERMIT 3-9020 FOR STORMWATER RUNOFF FROM CONSTRUCTION SITES. SHOULD CHANGES PRIOR TO OR DURING CONSTRUCTION RESULT IN ONE OR MORE ACRES OF EARTH DISTURBANCE OR SHOULD THE PROJECT BECOME PART OF A LARGER PLAN OF DEVELOPMENT, THE CONTRACTOR WILL BE RESPONSIBLE FOR ANY ADDITIONAL PERMITTING.

1.4 EROSION PREVENTION AND SEDIMENT CONTROL

THE EROSION CONTROL PLANS ARE MEANT AS A GUIDELINE FOR PREVENTING EROSION AND CONTROLLING SEDIMENT TRANSPORT. THE PRINCIPLES OUTLINED IN THIS NARRATIVE CONSIST OF APPLYING MEASURES THROUGHOUT CONSTRUCTION OF THE PROJECT IN ORDER TO MINIMIZE SEDIMENT TRANSPORT TO THE RECEIVING WATERS. THE MEASURES INCLUDE STABILIZATION AND STRUCTURAL PRACTICES, STORM WATER CONTROLS AND OTHER POLLUTION PREVENTION PRACTICES. THEY HAVE BEEN PROPOSED BY THE DESIGNER AS A BASIS FOR PROTECTING RESOURCES AND WILL NEED TO BE BUILT UPON BASED ON THE SPECIFIC MEANS AND METHODS OF THE CONTRACTOR. REFER TO THE LOW RISK SITE HANDBOOK AND APPROPRIATE DETAIL SHEETS FOR SPECIFIC GUIDANCE AND CONSTRUCTION DETAILING.

ALL MEASURES SHALL BE REGULARLY MAINTAINED AND SHALL BE CHECKED FOR SEDIMENT BUILD-UP. SEDIMENT SHALL BE DISPOSED OF AT AN APPROVED SITE WHERE IT WILL NOT BE SUBJECT TO EROSION.

1.4.1 MARK SITE BOUNDARIES
SITE BOUNDARIES AND AREAS CONSTRUCTION EQUIPMENT CAN ACCESS SHALL BE DELINEATED.

PROJECT DEMARCATION FENCING (PDF) SHALL BE USED TO PHYSICALLY MARK SITE BOUNDARIES.

1.4.2 LIMIT DISTURBANCE AREA
PREVENTING INITIAL SOIL EROSION BY MINIMIZING THE EXPOSED AREA IS MUCH MORE EFFECTIVE THAN TREATING ERODED SEDIMENT. EARTH DISTURBANCE CAN BE MINIMIZED THROUGH CONSTRUCTION PHASING BY ONLY OPENING UP EARTH AS NECESSARY. THIS CAN LIMIT THE AREA THAT WILL BE DISTURBED AND EXPOSED TO EROSION. EMPLOY TEMPORARY CONSTRUCTION STABILIZATION PRACTICES IN INCREMENTAL STAGES AS PHASES CHANGE. FOR PROJECTS WHICH FALL UNDER THE CONSTRUCTION GENERAL PERMIT, ONLY THE ACREAGE LISTED ON THE PERMIT AUTHORIZATION MAY BE EXPOSED AT ANY GIVEN TIME.

MAINTAINING VEGETATED BUFFERS ALONG STREAM BANKS, WETLANDS OR OTHER SENSITIVE AREAS IS A CRUCIAL EROSION AND SEDIMENT CONTROL MEASURE THAT SHOULD BE ESTABLISHED WHEREVER POSSIBLE.

1.4.3 SITE ENTRANCE/EXIT STABILIZATION
TRACKING OF SEDIMENT ONTO PUBLIC HIGHWAYS SHALL BE MINIMIZED TO REDUCE THE POTENTIAL FOR RUNOFF ENTERING RECEIVING WATERS. INSTALLATION SHALL COINCIDE WITH THE CONTRACTOR'S PROGRESS SCHEDULE.

STABILIZED CONSTRUCTION ENTRANCES SHALL BE INSTALLED AS PROPOSED ON THE EPSC PLAN AND ANYWHERE EQUIPMENT WILL BE GOING FROM AREAS OF EXPOSED SOILS TO PAVED SURFACES.

1.4.4 INSTALL SEDIMENT BARRIERS
SEDIMENT BARRIERS SHALL BE UTILIZED TO INTERCEPT RUNOFF AND ALLOW SUSPENDED SEDIMENT TO SETTLE OUT. THEY SHALL BE INSTALLED PRIOR TO ANY UP SLOPE WORK.

SILT FENCE WILL BE INSTALLED AS PROPOSED ON THE EPSC PLAN.

1.4.5 DIVERT UPLAND RUNOFF
DIVERSIONARY MEASURES SHALL BE USED TO INTERCEPT RUNOFF FROM ABOVE THE CONSTRUCTION AND DIRECT IT AROUND THE DISTURBED AREA SO THAT CLEAN WATER DOES NOT BECOME MUDDIED WHILE TRAVELING OVER EXPOSED SOILS ON THE CONSTRUCTION SITE.

THE PROJECT AREA IS RELATIVELY FLAT. THEREFORE IT IS NOT ANTICIPATED THAT DIVERSION MEASURES WILL BE NECESSARY.

(NOT ANTICIPATED FOR THIS PROJECT)

1.4.6 SLOW DOWN CHANNELIZED RUNOFF
CHECK STRUCTURES SHALL BE UTILIZED TO REDUCE THE VELOCITY, AND THUS THE EROSIVE POTENTIAL, OF CONCENTRATED FLOW IN CHANNELS.

(NOT ANTICIPATED FOR THIS PROJECT)

1.4.7 CONSTRUCT PERMANENT CONTROLS
PERMANENT STORMWATER TREATMENT DEVICES SHALL BE INSTALLED AS SHOWN ON THE PLANS AND IN ACCORDANCE WITH PERMIT CONDITIONS.

1.4.8 STABILIZE EXPOSED SOILS DURING CONSTRUCTION
ALL AREAS OF DISTURBANCE MUST HAVE TEMPORARY STABILIZATION IN PLACE WITHIN 48 HOURS OF DISTURBANCE OR IN ACCORDANCE WITH THE CONSTRUCTION GENERAL PERMIT 3-9020 AUTHORIZATION.

SURFACE ROUGHENING OF ALL EXPOSED SLOPES, COMBINED WITH TEMPORARY MULCHING, SHALL BE UTILIZED ON A REGULAR BASIS. BIODEGRADABLE EROSION CONTROL MATTING OR AN EQUIVALENT SHALL BE USED TO STABILIZE ALL SLOPES STEEPER THAN 1:3.

THE FORECAST OF RAINFALL EVENTS SHALL TRIGGER IMMEDIATE PROTECTION OF EXPOSED SOILS.

1.4.9 WINTER STABILIZATION
VARIOUS MEASURES SPECIFIC TO WINTER MAY BE NECESSARY SHOULD THE PROJECT EXTEND INTO WINTER (OCTOBER 15 THROUGH APRIL 15). REFER TO THE LOW RISK SITE HANDBOOK FOR GUIDANCE.

1.4.10 STABILIZE SOIL AT FINAL GRADE
EXPOSED SOIL MUST BE STABILIZED WITHIN 48 HOURS OF REACHING FINAL GRADE.

SEED, MULCH, FERTILIZER AND LIME SHALL BE USED TO ESTABLISH PERMANENT VEGETATION. FOR SLOPES STEEPER THAN 1:3, BIODEGRADABLE EROSION CONTROL MATTING OR AN EQUIVALENT SHALL BE USED INSTEAD OF MULCH.

1.4.11 DE-WATERING ACTIVITIES
DISCHARGE FROM DEWATERING ACTIVITIES THAT FLOWS OFF OF THE CONSTRUCTION SITE MUST NOT CAUSE OR CONTRIBUTE TO A VIOLATION OF THE VERMONT WATER QUALITY STANDARDS.

(NOT ANTICIPATED FOR THIS PROJECT)

1.4.12 INSPECT YOUR SITE
INSPECT THE PROJECT SITE BASED ON SPECIAL PROVISION REQUIREMENTS OR CONSTRUCTION GENERAL PERMIT AUTHORIZATION STIPULATIONS.

1.5 SEQUENCE AND STAGING

THIS SECTION WILL BE DEVELOPED BY THE CONTRACTOR USING THE GUIDANCE OUTLINED IN THE VTRANS EPSC PLAN CONTRACTOR CHECKLIST.

1.5.2 OFF-SITE ACTIVITIES
IN ADDITION TO THE CONTRACTOR CHECKLIST ANY ACTIVITIES OUTSIDE THE CONSTRUCTION LIMITS SHALL FOLLOW SUBSECTIONS 105.25- 105.29 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION.

PROJECT NAME: MIDDLESEX
PROJECT NUMBER: BRF 024-1(37)

FILE NAME: s10c220erodtls.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: H. SALLS
EPSC NARRATIVE

PLOT DATE: 13-JAN-2015
DRAWN BY: R. PELLETT
CHECKED BY: H. SALLS
SHEET 40 OF 46

N

VT STATE PLANE GRID

39C - COLTON GRAVELLY SAND
WITH 8% TO 15% SLOPES
"K FACTOR" = 0.17

19C - COLONEL FINE SANDY LOAM
WITH 8% TO 15% SLOPES
"K FACTOR" = 0.20

41E - BUXON SILT LOAM
WITH 25% TO 45% SLOPES
"K FACTOR" = 0.32

BEGIN APPROACH
STA 26+75.00

BEGIN PROJECT
STA 27+75.00

BEGIN BRIDGE
STA 28+97.11

END BRIDGE
STA 29+43.89

END PROJECT
STA 30+75.00

END APPROACH
STA 31+75.00

EXISTING R.O.W.

VT 12
TO MONTPELIER

VT 12
TO WORCESTER

TH 18

S MAPLES

COMB POLE
#13/172

COMB POLE
#17/173

COMB POLE
#17&#19

COMB ROL
#20/176

HVCTRL

GUYW

M PINE

TEL

AER E&T

HABITAT

BROOK

TREE

BOULDER WITH
PLAQUE FLOOD

TEMPORARY
RIPRAP PAD

26+25 27+00 28+00 29+00 30+00 31+00 32+00 32+25

SCALE 1" = 20'-0"
20 0 20

PROJECT NAME:	MIDDLESEX
PROJECT NUMBER:	BRF 024-1(37)
FILE NAME: s10c220bdrero.dgn	PLOT DATE: 13-JAN-2015
PROJECT LEADER: C. CARLSON	DRAWN BY: R. PELLETT
DESIGNED BY: H. SALLS	CHECKED BY: H. SALLS
EPSC EXISTING LAYOUT	SHEET 41 OF 46

N

VT STATE PLANE GRID

BEGIN APPROACH
STA 26+75.00

BEGIN PROJECT
STA 27+75.00

BEGIN BRIDGE
STA 28+97.11

END BRIDGE
STA 29+43.89

END PROJECT
STA 30+75.00

END APPROACH
STA 31+75.00

EXISTING R.O.W.

VT 12
TO MONTPELIER

VT 12
TO WORCESTER

N 23°51'20.52" E

26+25 27+00 28+00 29+00 30+00 31+00 32+00 32+25

730 720 710 700 690

HVCTRL

COMB POLE #17/172

COMB POLE #17/173

COMB POLE #20/175

TEL COMB POLE #17/174

AER E&T

PDF

M PINE

TREE

BOULDER WITH PLAQUE FLOOD

TEMPORARY SUPPORT

TH 18

S MAPLES

GUYW

BROOK

STABILIZED CONSTRUCTION ENTRANCE

NOTE:
SEE SHEET 9 FOR SYMBOLOGY LEGEND

SCALE 1" = 20'-0"
20 0 20

PROJECT NAME:	MIDDLESEX
PROJECT NUMBER:	BRF 024-1(37)
FILE NAME: s10c220bdrero.dgn	PLOT DATE: 13-JAN-2015
PROJECT LEADER: C. CARLSON	DRAWN BY: R. PELLETT
DESIGNED BY: H. SALLS	CHECKED BY: H. SALLS
EPSC CONSTRUCTION LAYOUT	SHEET 42 OF 46

N

VT STATE PLANE GRID

BEGIN APPROACH
STA 26+75.00

BEGIN PROJECT
STA 27+75.00

BEGIN BRIDGE
STA 28+97.11

END BRIDGE
STA 29+43.89

END PROJECT
STA 30+75.00

END APPROACH
STA 31+75.00

EXISTING R.O.W.

VT 12
TO MONTPELIER

VT 12
TO WORCESTER

N 23°51'20.52" E

26+25 27+00 28+00 29+00 30+00 31+00 32+00 32+25

730 720 710 700 690

HVCTRL

M PINE

TREE

COMB POLE
#17/172

COMB POLE
#17&#19

TEL
COMB POLE
#17&#19

AER E&T

TH 18

S MAPLES

GUYW

COMB POL
#20/175

BOULDER WITH
PLAQUE FLOOD

TEMPORARY
SUPPORT

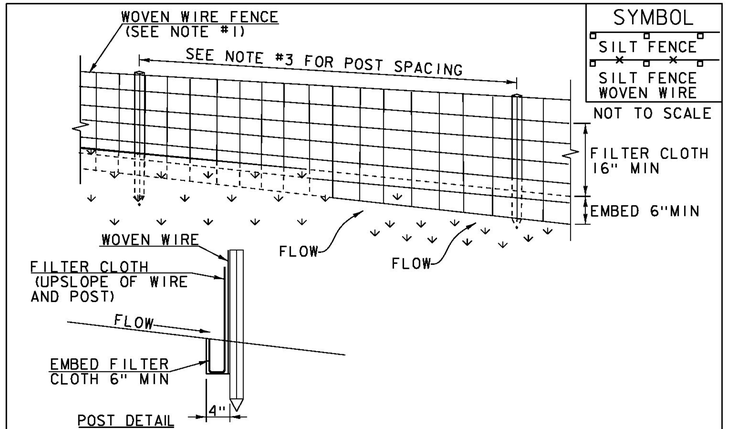
BROOK

NOTE:
REFER TO CROSS SECTIONS FOR FINAL GROUND CONTOURS.
SEE SHEET 9 FOR SYMBOLOGY LEGEND

SCALE 1" = 20'-0"
20 0 20

PROJECT NAME:	MIDDLESEX
PROJECT NUMBER:	BRF 024-1(37)

FILE NAME: s10c220bdrero.dgn	PLOT DATE: 13-JAN-2015
PROJECT LEADER: C. CARLSON	DRAWN BY: R. PELLETT
DESIGNED BY: H. SALLS	CHECKED BY: H. SALLS
EPSC FINAL LAYOUT	SHEET 43 OF 46



SYMBOL

SILT FENCE

SILT FENCE WOVEN WIRE

NOT TO SCALE

CONSTRUCTION SPECIFICATIONS

1. WOVEN WIRE REINFORCED FENCE IS REQUIRED WITHIN 100' UPSLOPE OF RECEIVING WATERS WHEN THE PROJECT FALLS UNDER A CONSTRUCTION STORMWATER PERMIT. WOVEN WIRE SHALL BE A MIN. 14 GAUGE WITH A 6" MAX. MESH OPENING.
2. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI100X, STABILINKA T140N OR APPROVED EQUIVALENT.
3. POST SPACING FOR WIRE-BACKED FENCE SHALL BE 10' MAXIMUM. FOR FILTER-CLOTH FENCE, WHEN ELONGATION IS >50%, POST SPACING SHALL NOT EXCEED 4' AND WHEN ELONGATION IS <50%, POST SPACING SHALL NOT EXCEED 6'.
4. WOVEN WIRE FENCE IS TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES. FILTER CLOTH IS TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.
5. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY 6" AND FOLDED.
6. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN SEDIMENT REACHES HALF OF FABRIC HEIGHT.

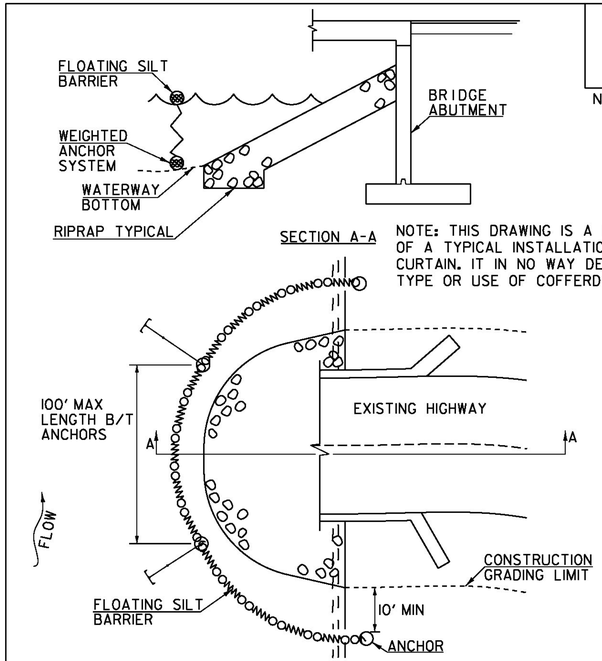
ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC
ORIGINALLY DEVELOPED BY USDA-NRCS
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SILT FENCE

NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- "FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 649 AND AS SHOWN IN THE PLANS FOR ~~GEOTEXTILE FOR SILT FENCE (PAY ITEM 649.511) OR~~ GEOTEXTILE FOR SILT FENCE, WOVEN WIRE REINFORCED (PAY ITEM 649.515).

REVISIONS	
MARCH 21, 2008	WHF
DECEMBER 11, 2008	WHF
JANUARY 13, 2009	WHF



SYMBOL

NOT TO SCALE

NOTE: THIS DRAWING IS A DEPICTION OF A TYPICAL INSTALLATION OF FILTER CURTAIN. IT IN NO WAY DEFINES THE TYPE OR USE OF COFFERDAM IF USED.

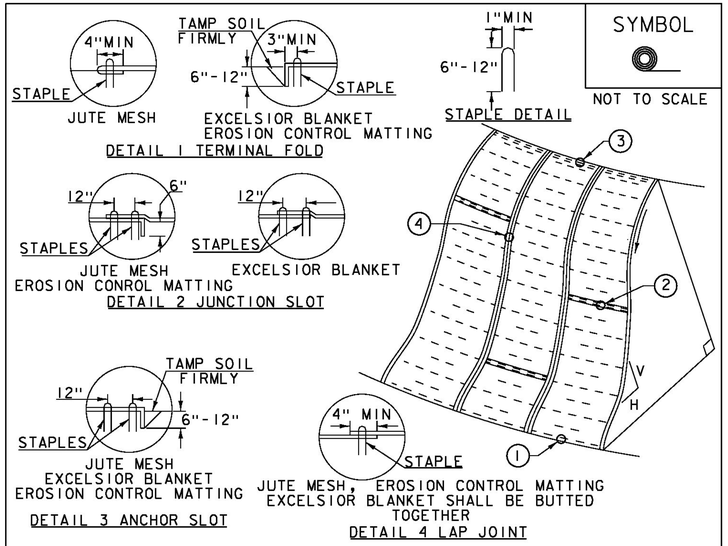
CONSTRUCTION SPECIFICATIONS

1. FILTER CURTAIN SHALL NOT BE PLACED ACROSS A FLOWING WATERWAY, OR IN A WATERWAY WITH STREAM VELOCITIES GREATER THAN 1.5 FEET/SECOND.
2. MAXIMUM 100' LENGTH BETWEEN ANCHORS.
3. LAST SECTION SHALL TERMINATE A MINIMUM OF 10' BEYOND LIMIT OF DISTURBANCE.
4. THE WEIGHTED ANCHOR SYSTEM SHALL BE A TYPE WHICH ALLOWS THE CURTAIN TO CONFORM TO THE BOTTOM OF THE WATERWAY.
5. THE CURTAIN SHALL BE REMOVED BY SLOWLY PULLING TOWARD THE SHORE MINIMIZING THE ESCAPE OF SEDIMENTS INTO WATERWAY.

FILTER CURTAIN

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 649 FOR GEOTEXTILE FOR FILTER CURTAIN (PAY ITEM 649.61).

REVISIONS	
APRIL 1, 2008	WHF
JANUARY 13, 2009	WHF
SEPTEMBER 4, 2009	WHF



SYMBOL

NOT TO SCALE

CONSTRUCTION SPECIFICATIONS

1. APPLY TO SLOPES GREATER THAN 3H: 1V OR WHERE NECESSARY TO AID IN ESTABLISHING VEGETATION.
2. APPLY FERTILIZER, LIME SEED PRIOR TO PLACING MATTING.
3. STAPLES ARE TO BE PLACED ALTERNATELY, IN COLUMNS APPROXIMATELY 2' APART AND IN ROWS APPROXIMATELY 3' APART. APPROXIMATELY 175 STAPLES ARE REQUIRED PER 4'X225' ROLL OF MATERIAL AND 125 STAPLES ARE REQUIRED PER 4'X150' ROLL OF MATERIAL.
4. DISTURBED AREAS SHALL BE SMOOTHLY GRADED. EROSION CONTROL MATERIAL SHALL BE PLACED LOOSELY OVER GROUND SURFACE. DO NOT STRETCH.
5. ALL TERMINAL ENDS AND TRANSVERSE LAPS SHALL BE STAPLED AT APPROXIMATELY 12" INTERVALS.

ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC
ORIGINALLY DEVELOPED BY USDA-NRCS
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

ROLLED EROSION CONTROL PRODUCT (RECP) SIDE SLOPE

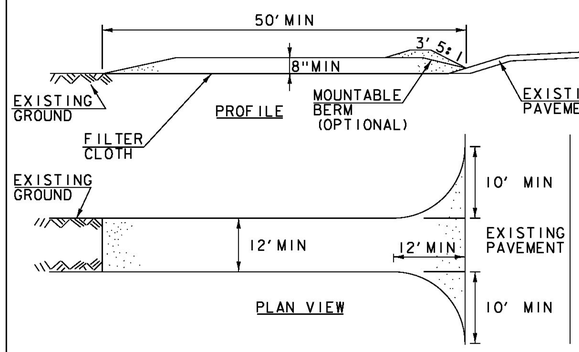
NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- "FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.
THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 653 AND AS SHOWN IN THE PLANS FOR TEMPORARY EROSION MATTING (PAY ITEM 653.20) OR ~~PERMANENT EROSION MATTING (PAY ITEM 653.21).~~

REVISIONS	
APRIL 16, 2007	JMF
JANUARY 13, 2009	WHF

PROJECT NAME: MIDDLESEX
PROJECT NUMBER: BRF 024-1(37)

FILE NAME: sl0c220erodtls.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: H. SALLS
EPSC DETAILS (1)

PLOT DATE: 13-JAN-2015
DRAWN BY: R. PELLETT
CHECKED BY: H. SALLS
SHEET 44 OF 46



SYMBOL

NOT TO SCALE

CONSTRUCTION SPECIFICATIONS

1. STONE SIZE- USE 1-4" STONE, RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH- NOT LESS THAN 50' (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30' MINIMUM LENGTH APPLIES).
3. THICKNESS- NOT LESS THAN 8".
4. WIDTH- 12' MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. 24' IF SINGLE ENTRANCE TO SITE.
5. GEOTEXTILE MUST BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING STONE.
6. SURFACE WATER- ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE- THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY, ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED ACCORDING TO PERMIT REQUIREMENTS.

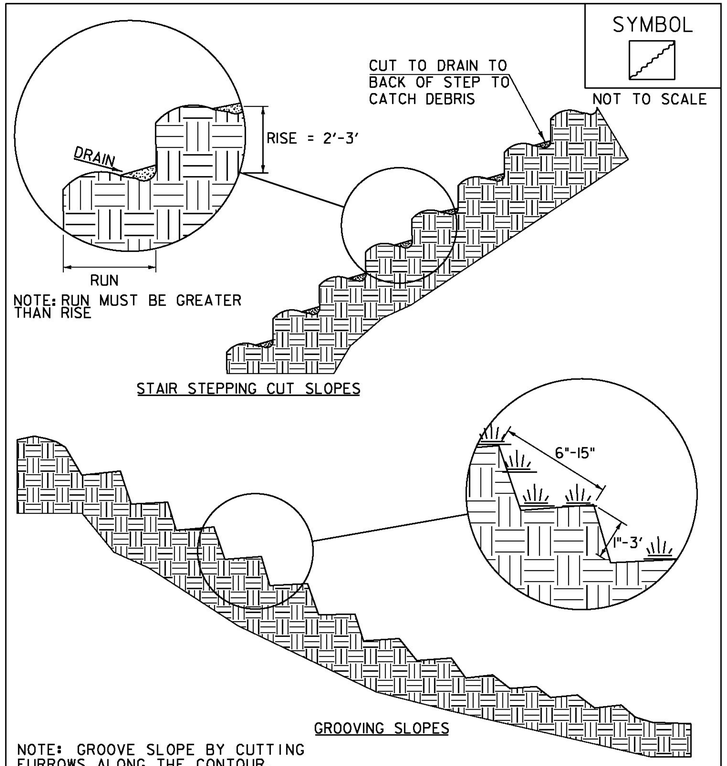
ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC ORIGINALLY DEVELOPED BY USDA-NRCS VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

STABILIZED CONSTRUCTION ENTRANCE

NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- "FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 653 FOR VEHICLE TRACKING PAD (PAY ITEM 653.35) OR AS SPECIFIED IN THE CONTRACT.

REVISIONS	
MARCH 24, 2008	WHF
JANUARY 13, 2009	WHF



NOTE: GROOVE SLOPE BY CUTTING FURROWS ALONG THE CONTOUR. IRREGULARITIES IN THE SOIL SURFACE CATCH RAINWATER AND RETAIN LIME, FERTILIZER AND SEED.

ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC ORIGINALLY DEVELOPED BY USDA-NRCS VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SURFACE ROUGHENING

NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- "FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT

REVISIONS	
APRIL 1, 2008	WHF
JANUARY 13, 2009	WHF

VAOT RURAL AREA MIX

	LBS/AC				
% WEIGHT	BROADCAST	HYDROSEED	NAME	GERM %	PURITY %
37.5%	22.5	45	CREEPING RED FESCUE	85%	98%
37.5%	22.5	45	TALL FESCUE	90%	95%
5.0%	3	6	RED TOP	90%	95%
15.0%	9	18	BIRDSFOOT TREFOIL	85%	98%
5.0%	3	6	ANNUAL RYE GRASS	85%	95%
100%	60	120			

VAOT URBAN AREA MIX

	LBS/AC				
% WEIGHT	BROADCAST	HYDROSEED	NAME	GERM %	PURITY %
42.5%	34	68	CREEPING RED FESCUE	85%	98%
10.0%	8	16	PERENNIAL RYE GRASS	90%	95%
42.5%	34	68	KENTUCKY BLUE GRASS	85%	85%
5.0%	4	8	ANNUAL RYE GRASS	85%	95%
100%	80	160			

SOIL AMENDMENT GUIDANCE

FERTILIZER		LIME	
BROADCAST	HYDROSEED	BROADCAST	HYDROSEED
10-20-10	*FOLLOW*	PELLETIZED	*FOLLOW*
500 LBS/AC	*MANUFACTURER*	2 TONS/AC	*MANUFACTURER*

CONSTRUCTION GUIDANCE

1. RURAL SEED MIX: USE AS INDICATED IN THE PLANS AND/OR FOR ALL ESTABLISHED UPLAND (NON WETLAND) AREAS DISTURBED BY THE CONTRACTOR.
2. URBAN SEED MIX: USE AS INDICATED IN THE PLANS AND/OR FOR ALL ESTABLISHED LAWN AREAS DISTURBED BY THE CONTRACTOR.
3. ALL SEED MIXTURES: SHALL NOT HAVE A WEED CONTENT EXCEEDING 0.40% BY WEIGHT AND SHALL BE FREE OF ALL NOXIOUS SEED.
4. FERTILIZER AND LIMESTONE: SHALL FOLLOW RATES SHOWN ON PLAN OR AS DIRECTED BY THE ENGINEER
5. HAY MULCH: TO BE PLACED ON EARTH SLOPES AT THE RATE OF 2 TONS/ACRE, ACHIEVE 90% GROUND COVER OR AS DIRECTED BY THE ENGINEER.
6. TOPSOIL: TO BE USED WITH SEED AS INDICATED ON THE PLANS, OR AS DIRECTED BY THE ENGINEER.
7. HYDROSEEDING: ALTHOUGH GUIDANCE IS GIVEN ABOVE THE SITE CONDITIONS AND THE TYPE OF HYDROSEED WILL ULTIMATELY DICTATE THE AMOUNTS AND TYPES OF SOIL AMENDMENTS TO BE APPLIED
8. TURF ESTABLISHMENT: PLACING SEED, FERTILIZER, LIME AND MULCH PRIOR TO SEPTEMBER 15 AND AFTER APRIL 15 CAN BETTER ENSURE A VIGOROUS GROWTH OF GRASS.

ADAPTED FROM VTRANS TECHNICAL LANDSCAPE MANUAL FOR ROADWAYS AND TRANSPORTATION FACILITIES

TURF ESTABLISHMENT

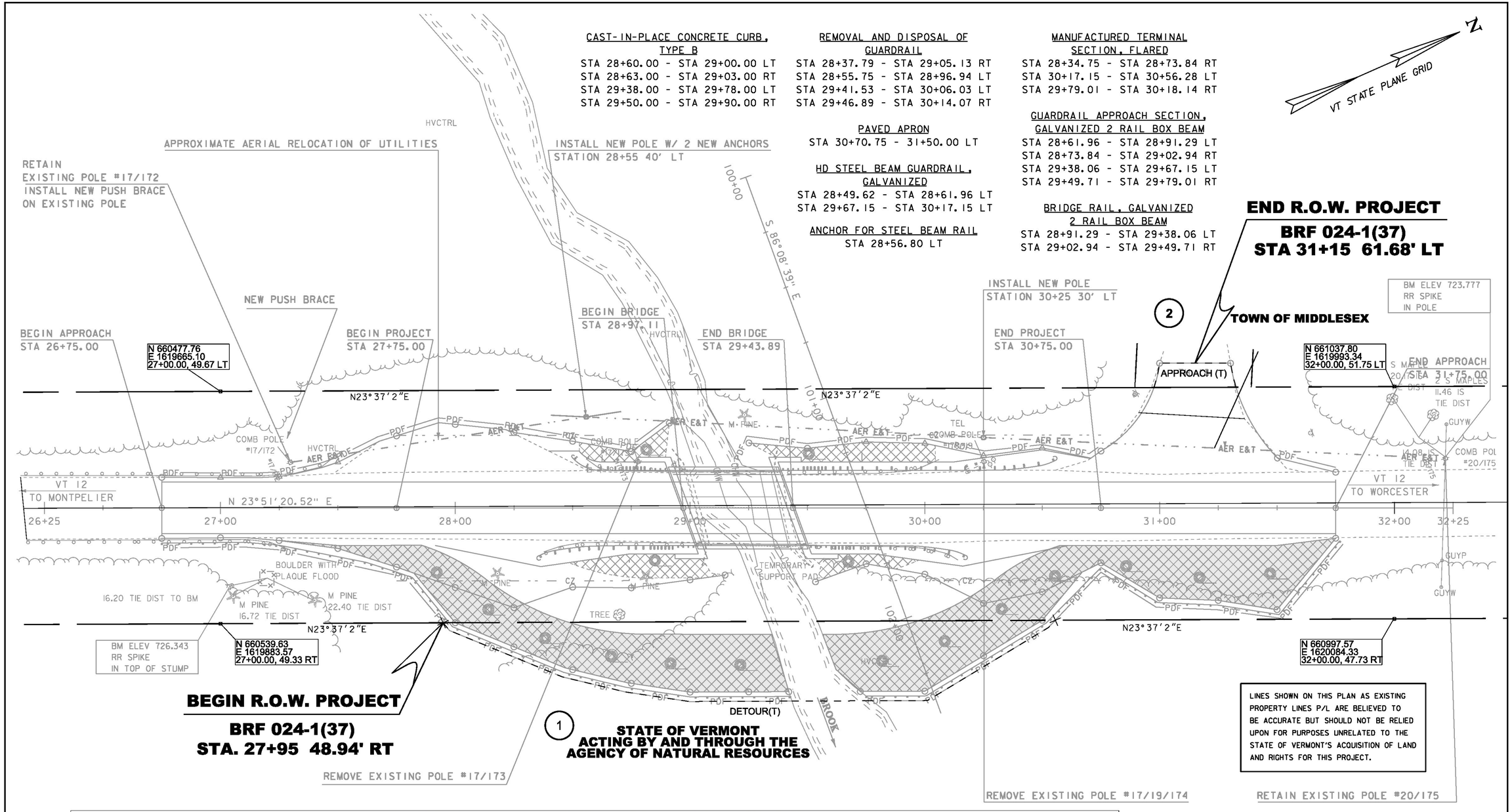
THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 651 ~~FOR SEED (PAY ITEM 651.15)~~

REVISIONS	
JUNE 23, 2009	WHF
JANUARY 15, 2010	WHF
FEBRUARY 16, 2011	WHF

PROJECT NAME: MIDDLESEX
PROJECT NUMBER: BRF 024-1(37)

FILE NAME: s10c220erodtls.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: H. SALLS
EPSC DETAILS (2)

PLOT DATE: 13-JAN-2015
DRAWN BY: R. PELLETT
CHECKED BY: H. SALLS



STATE OF VERMONT
AGENCY OF TRANSPORTATION

RIGHT - OF - WAY DETAIL SHEET

TABLE OF PROPERTY ACQUISITION

PARCEL NO.	PROPERTY OWNER	SHEET NO.	BEGINNING STATION	ENDING STATION	TAKE AREA±	REMAINDER AREA±	RIGHT TYPE	(T)/(P)	AREA ±	RECORDING DATA TITLE	DATE	TOWN / CITY	BOOK	PAGE	REMARKS
1	STATE OF VERMONT ACTING BY AND THROUGH THE AGENCY OF NATURAL RESOURCES	1	27+95 RT	30+56 LT			DETOUR	T	0.15A						6,633 SF±; INCL. PDF & EC
2	TOWN OF MIDDLESEX	1	31+15 LT				APPROACH	T	332 SF						

TABLE OF REVISIONS

REVISION NO.	SHEET NO.	DESCRIPTION	DATE

FOR R.O.W. USE ONLY

SCALE 1" = 20'-0"
20 0 20

NOTE: UTILITY WORK TO BE DONE BY OTHERS

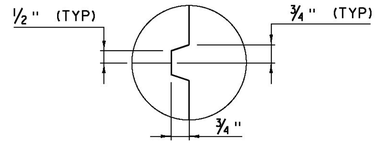
PROJECT NAME: MIDDLESEX
PROJECT NUMBER: BRF 024-1(37)

FILE NAME: NAME*DGN
PROJECT LEADER: C. CARLSON
DESIGNED BY: H. SALLS
R.O.W. INFORMATION SHEET

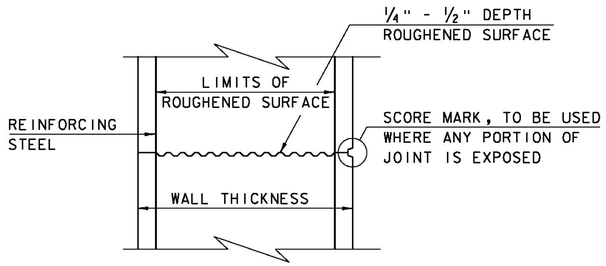
PLOT DATE: 13-JAN-2015
DRAWN BY: J. BLANCHARD
CHECKED BY: R. CLOUTIER
SHEET 46 OF 46

CONCRETE GENERAL NOTES

1. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1" x 1"
2. REINFORCING STEEL SIZE AND SPACING SHOWN IN THE PLANS IS BASED ON 60 KSI STEEL, UNLESS NOTED OTHERWISE. WITH THE ENGINEER'S PERMISSION, BAR SIZE AND SPACING MAY BE MODIFIED ACCORDING TO THE LATEST AASHTO LRFD BRIDGE DESIGN SPECIFICATION AND STRUCTURES DESIGN MANUAL WHEN USING HIGHER STRENGTH STEEL.

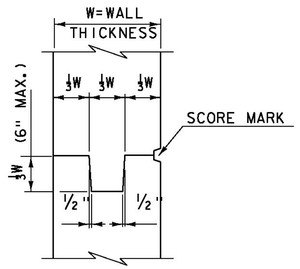


SCORE MARK DETAIL
(NOT TO SCALE)

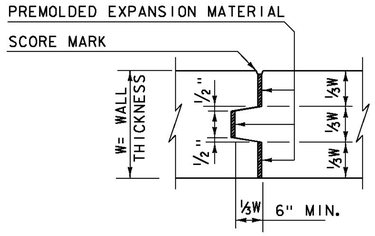


TYPICAL HORIZONTAL CONSTRUCTION JOINT
(NOT TO SCALE)

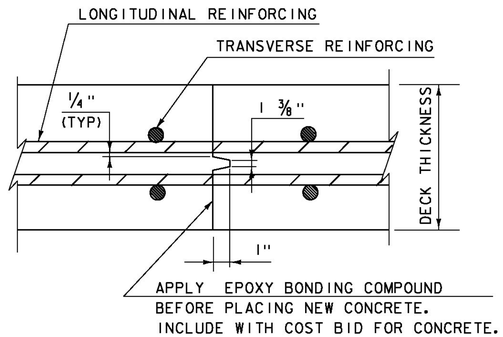
1. THE SURFACE OF THE CONCRETE CONSTRUCTION JOINTS SHALL BE CLEANED AND FREE OF LAITANCE.
2. IMMEDIATELY BEFORE NEW CONCRETE IS PLACED, ALL CONSTRUCTION JOINTS SHALL BE WETTED AND STANDING WATER REMOVED.



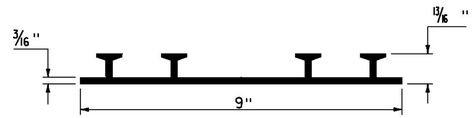
TYPICAL CONCRETE CONSTRUCTION JOINT
(NOT TO SCALE)



TYPICAL CONCRETE EXPANSION JOINT
(NOT TO SCALE)



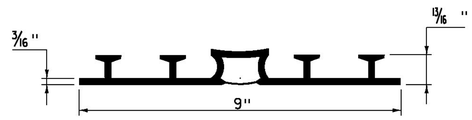
TRANSVERSE BRIDGE SLAB
CONSTRUCTION JOINT DETAILS
(NOT TO SCALE)



P.V.C. WATERSTOP FOR
CONSTRUCTION JOINTS
(NOT TO SCALE)

PAYMENT FOR THE P.V.C. WATERSTOP SHALL BE INCIDENTAL TO THE UNIT BID PRICE FOR THE ADJACENT CONCRETE.

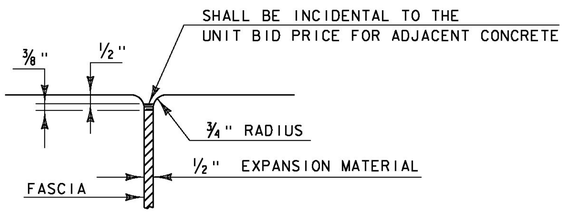
OTHER CONFIGURATIONS OF WATERSTOP MAY BE USED UPON APPROVAL OF THE ENGINEER.



P.V.C. WATERSTOP FOR
EXPANSION JOINTS
(NOT TO SCALE)

PAYMENT FOR THE P.V.C. WATERSTOP SHALL BE INCIDENTAL TO THE UNIT BID PRICE FOR THE ADJACENT CONCRETE.

OTHER CONFIGURATIONS OF WATERSTOP MAY BE USED UPON APPROVAL OF THE ENGINEER.



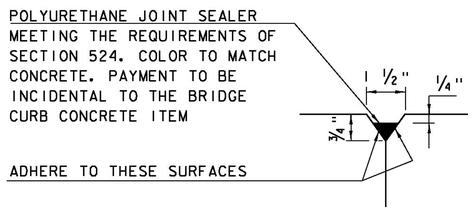
JOINT BETWEEN FASCIA
AND WINGWALL
(NOT TO SCALE)

REVISIONS	
MAY 7, 2010	APPROVED FOR USE BY VAOT STRUCTURES SECTION
FEBRUARY 9, 2012	REBAR SUBSTITUTION ALLOWANCE ADDED TO CONCRETE GENERAL NOTES.

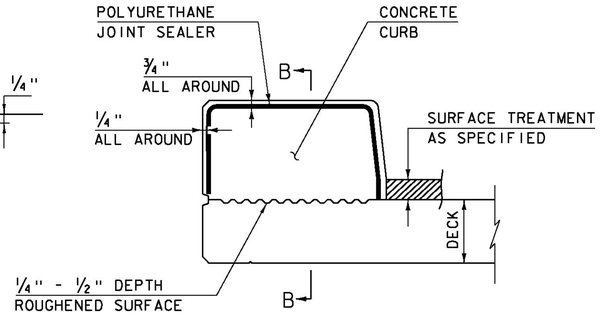
CONCRETE DETAILS AND NOTES

VERMONT AGENCY OF TRANSPORTATION
STRUCTURES - SECTION

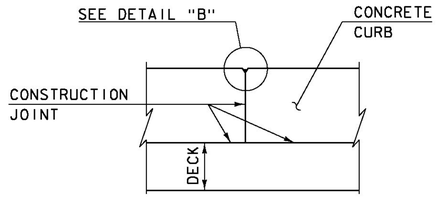
STRUCTURES DETAIL
SD-501.00



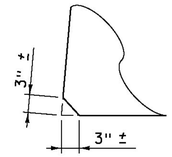
DETAIL "B"
(NOT TO SCALE)



CONCRETE CURB JOINT SECTION
(NOT TO SCALE)

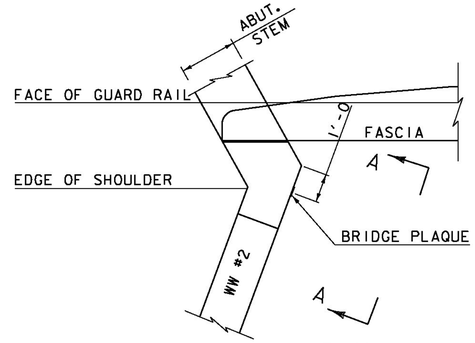


SECTION B - B
(NOT TO SCALE)



ACUTE ANGLE CLIP DETAIL
(NOT TO SCALE)

1. SEE TYPICAL HORIZONTAL CONSTRUCTION JOINT DETAIL FOR ADDITIONAL INFORMATION



PLAN

CONCRETE CURB JOINT NOTES

1. CONCRETE CURBS MAY BE PLACED IN ONE CONTINUOUS OPERATION IF AN APPROVED SHRINKAGE REDUCING ADMIXTURE LISTED IN THE SPECIAL PROVISIONS IS USED WITH THE CONCRETE MIX DESIGN. PAYMENT FOR THE SHRINKAGE REDUCING ADMIXTURE WILL BE INCIDENTAL TO THE BRIDGE CURB CONCRETE ITEM.

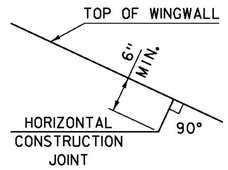
2. IF THE CONTRACTOR CHOOSES NOT TO USE AN APPROVED SHRINKAGE REDUCING ADMIXTURE, THE CURBS SHALL BE CONSTRUCTED WITH CONSTRUCTION JOINTS SPACED AT A MAXIMUM OF 15'-0" CENTER TO CENTER AND 2'-0" MINIMUM FROM THE CENTER OF NEAREST BRIDGE RAILING POST.

3. ON MULTI-SPAN CONTINUOUS SUPERSTRUCTURES, REGARDLESS OF WHETHER APPROVED SHRINKAGE REDUCING ADMIXTURE IS USED, CURB JOINTS SHALL BE LOCATED OVER THE CENTERLINE OF PIERS AND 7'-0" EACH SIDE OF THE CENTERLINE OF EACH PIER.

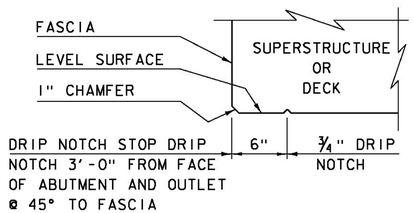
4. WHEN CURB JOINTS ARE USED THE CURBS SHALL BE PLACED IN ALTERNATE SECTIONS WITH A MINIMUM OF 48 HOUR DELAY BETWEEN ADJACENT PLACEMENTS.

5. LONGITUDINAL REINFORCING SHALL BE CONTINUOUS THROUGH CURB CONSTRUCTION JOINTS. CURB STIRRUP BARS SHALL BE TURNED AS NECESSARY TO MAINTAIN COVER IN THE FLARED CURB ENDS.

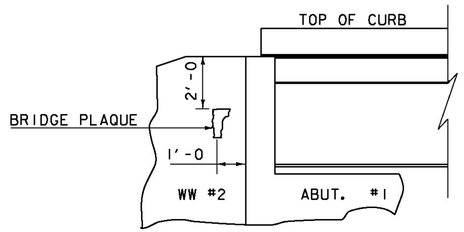
6. THE JOINT SPACING AND DETAILS SHOWN SHALL APPLY TO SIDEWALKS WHEN SHOWN IN THE PLANS.



HORIZONTAL WINGWALL CONSTRUCTION JOINT
(NOT TO SCALE)



DRIP NOTCH DETAIL
(NOT TO SCALE)



VIEW "A - A"

BRIDGE PLAQUE
(NOT TO SCALE)

THE BRIDGE PLAQUE WILL BE SUPPLIED BY THE AGENCY OF TRANSPORTATION AND SHALL BE INSTALLED BY THE CONTRACTOR AT ABUTMENT #1 ON THE RIGHT SIDE AS SHOWN OR AS DIRECTED BY THE ENGINEER.

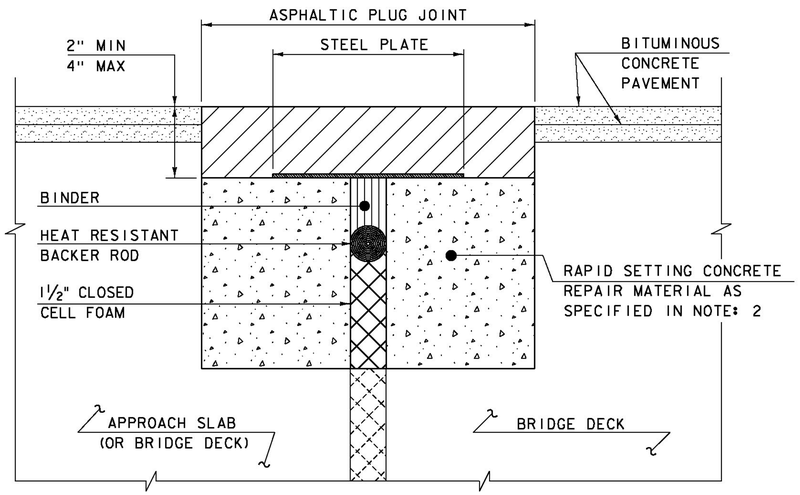
PAYMENT FOR INSTALLATION OF THE BRIDGE PLAQUE SHALL BE INCIDENTAL TO THE ADJACENT CONCRETE.

REVISIONS	
MAY 7, 2010	APPROVED FOR USE BY VAOT STRUCTURES SECTION
JUNE 4, 2010	MODIFIED AND ADDED TWO DETAILS
OCTOBER 10, 2012	MODIFIED HORZ. JOINT WINGWALL ADD 6" MIN. DIMENSION

CONCRETE DETAILS AND NOTES

VERMONT AGENCY OF TRANSPORTATION
STRUCTURES - SECTION

STRUCTURES DETAIL
SD-502.00



ASPHALTIC PLUG JOINT DETAIL - REHAB

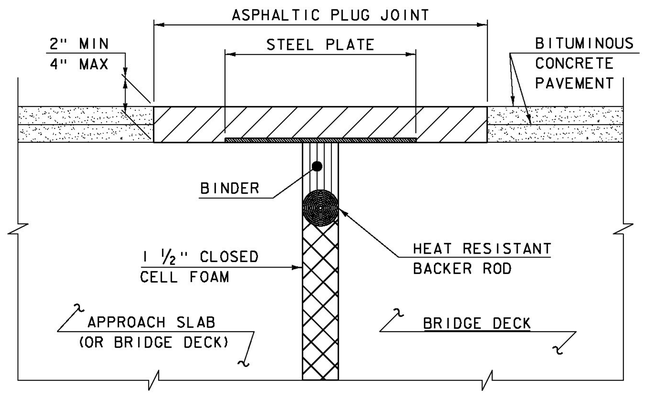
NOTES:

1. THE CONTRACTOR SHALL REMOVE ALL ASPHALTIC PLUG JOINT MATERIAL AND DETERIORATED CONCRETE AS DIRECTED BY THE ENGINEER. REMOVAL OF THE FIRST 4 INCHES OF MATERIAL SHALL BE INCLUDED IN THE BID PRICE FOR ITEM 516.10 BRIDGE EXPANSION JOINT, ASPHALTIC PLUG. ANY REMOVAL OF MATERIAL GREATER THAN 4 INCHES SHALL BE INCLUDED IN THE BID PRICE OF ITEM 580.20 RAPID SETTING CONCRETE REPAIR MATERIAL WITH COARSE AGGREGATE.

2. THE CONTRACTOR SHALL REPLACE REMOVED MATERIAL THAT IS LESS THAN 4" FROM FINISHED GRADE WITH ASPHALTIC PLUG JOINT MATERIAL MEETING THE REQUIREMENTS OF SUBSECTION 707.15. ALL REMOVED MATERIAL THAT IS GREATER THAN 4 INCHES FROM FINISHED GRADE SHALL BE REPLACED WITH RAPID SETTING CONCRETE REPAIR MATERIAL WITH COARSE AGGREGATE MEETING THE REQUIREMENTS OF SUBSECTION 780.04.

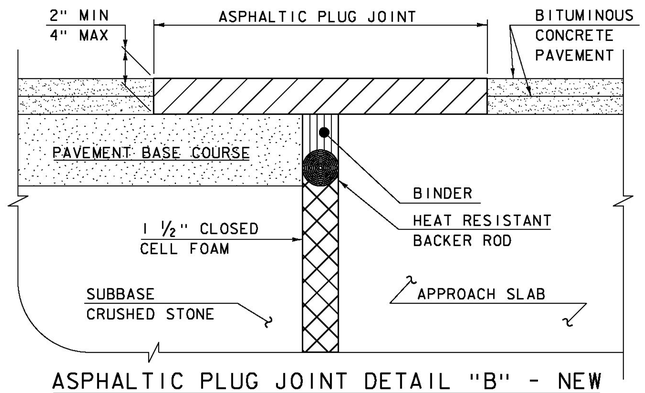
3. REINFORCING STEEL NOT SHOWN FOR CLARITY.

4. PLACE 1/4" THICK BY 8" WIDE SECTIONS OF STEEL PLATE OVER THE CENTER OF THE MOVEMENT GAP. SECURE THE PLATES FROM MOVING BY INSERTING LOCATING PINS THROUGH THE PRE-STAMPED HOLES INTO BACKER ROD AND COVER WITH HOT BINDER. THE STEEL PLATES MAY BE OMITTED WHERE THE ENGINEER DETERMINES THAT THE APPROACH SLAB OR BRIDGE DECK WILL PROVIDE INADEQUATE SUPPORT AND WHERE VERTICAL MOVEMENT OF THE PLATES MIGHT OCCUR.



ASPHALTIC PLUG JOINT DETAIL "A" - NEW

NOTE:
PLACE 1/4" THICK BY 8" WIDE SECTIONS OF STEEL PLATE OVER THE CENTER OF THE MOVEMENT GAP. SECURE THE PLATES FROM MOVING BY INSERTING LOCATING PINS THROUGH THE PRE-STAMPED HOLES INTO BACKER ROD AND COVER WITH HOT BINDER.



ASPHALTIC PLUG JOINT DETAIL "B" - NEW

ASPHALTIC PLUG JOINT NOTES

INSTALLATION:

1. LOCATE THE JOINT CENTRALLY OVER THE DECK OVERLAY EXPANSION GAP OR FIXED JOINT, MARKED OUT TO THE MANUFACTURER'S RECOMMENDED WIDTH.
2. REMOVE THE BITUMINOUS CONCRETE PAVEMENT FULL DEPTH AS SHOWN ON THE PLANS. THE PAVEMENT SHALL BE DRY AND SAW CUT TO THE LIMITS REQUIRED TO PLACE THE JOINT. A PNEUMATIC HAMMER AND CHISEL MAY BE USED ADJACENT TO THE CURB ONLY WHEN SAW CUTTING IS NOT POSSIBLE.
3. BLAST CLEAN THE JOINT AREA OF DEBRIS, ASPHALT AND SHEET MEMBRANE. THOROUGHLY DRY THE JOINT AREA WITH COMPRESSED AIR PRIOR TO APPLYING BINDER MATERIAL.
4. PLACE PROPERLY SIZED HEAT RESISTANT BACKER ROD IN THE MOVEMENT GAP ALLOWING FOR 1" +/- OF BINDER ABOVE THE ROD.
5. HEAT AND PLACE THE BINDER MATERIAL AS RECOMMENDED BY THE MANUFACTURER.
6. IMMEDIATELY AFTER TOP COATING, CAST AN ANTI-SKID MATERIAL OVER THE JOINT TO REDUCE THE RISK OF TRACKING.

WEATHER LIMITATIONS

APPLY BINDER MATERIAL ONLY WHEN THE FOLLOWING CONDITIONS PREVAIL OR AS RECOMMENDED BY THE MANUFACTURER:

1. THE AMBIENT AIR TEMPERATURE IS AT LEAST 10 DEG C (50 DEG F) AND RISING.
2. THE ROAD SURFACE IS DRY.
3. WEATHER CONDITIONS OR OTHER CONDITIONS ARE FAVORABLE AND ARE EXPECTED TO REMAIN SO FOR THE PERFORMANCE OF SATISFACTORY WORK.

DETAILS ON THIS SHEET ARE NOT TO SCALE.

REVISIONS	
MAY 7, 2010	APPROVED FOR USE BY VAOT STRUCTURES SECTION
AUGUST 29, 2011	ADD DETAIL "B" AND REV. NOTES

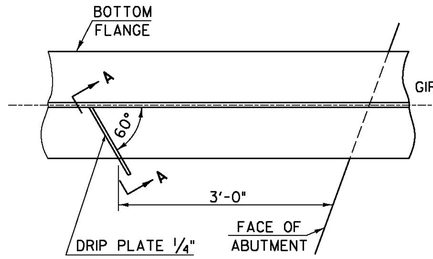
BRIDGE JOINT
ASPHALTIC PLUG

VERMONT AGENCY OF TRANSPORTATION
STRUCTURES - DIVISION

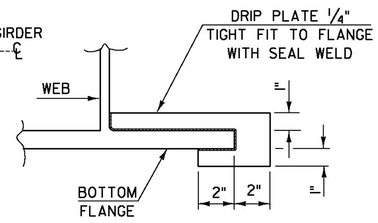
STRUCTURES DETAIL
SD-516.10

STRUCTURAL STEEL GENERAL NOTES:

1. ALL FIELD CONNECTIONS SHALL BE MADE WITH 7/8" DIAMETER HIGH-STRENGTH BOLTS IN 15/16" DIAMETER HOLES, PER SUBSECTION 506.19, UNLESS OTHERWISE SPECIFIED.
2. ALL HOLES IN THE WEBS OF THE FASCIA GIRDERS THAT ARE NOT OTHERWISE FILLED, SHALL BE FILLED WITH EITHER BUTTON HEAD OR HEX HEAD BOLTS. THESE BOLTS SHALL BE TIGHTENED IN ACCORDANCE WITH SUBSECTION 506.19.
3. ALL WELDING SHALL CONFORM TO THE PROVISIONS OF SUBSECTION 506.10.
4. ANY CONNECTIONS THAT ARE NOT DETAILED ON THE PLANS SHALL BE DETAILED BY THE FABRICATOR AND SUBMITTED TO THE STRUCTURES ENGINEER FOR APPROVAL.
5. STRUCTURAL STEEL MEMBERS DESIGNATED "CVN" IN THE PLANS SHALL BE CHARPY V-NOTCH TESTED IN ACCORDANCE WITH SUBSECTION 714.01 OF THE STANDARD SPECIFICATIONS.
6. ENDS OF GIRDERS ARE TO BE VERTICAL IN THEIR FINAL POSITION.
7. AFTER SUPERSTRUCTURE STEEL HAS BEEN ERECTED, ELEVATIONS ALONG THE TOP OF THE GIRDERS SHALL BE TAKEN AS DIRECTED BY THE RESIDENT ENGINEER FOR USE IN DETERMINING FINISHED GRADES.

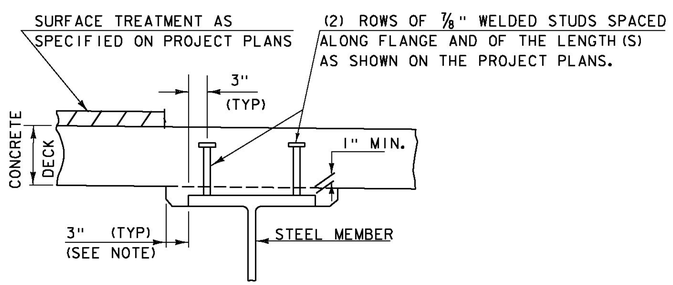


PLAN DRIP PLATE



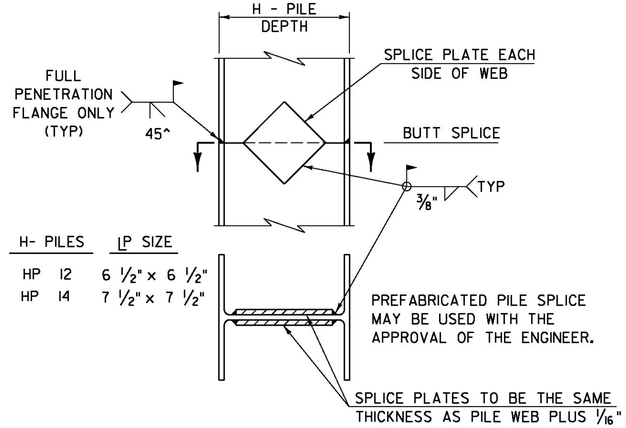
SECTION A - A

NOTE: DRIP PLATES SHALL BE PLACED ON OUTSIDE EDGE OF FASCIA GIRDERS ON THE HIGH SIDE OF ALL PIERS AND ABUTMENTS OR AS INDICATED ON PROJECT PLANS.



NOTE:
THE 3" HORIZONTAL SECTION MAY BE ELIMINATED FOR FORMING SYSTEMS DESIGNED FOR THE CONSTRUCTION OF VERTICAL HAUNCHES. ANY VOIDS RESULTING FROM FORMING SYSTEM ELEMENTS SHALL BE FILLED WITH JOINT SEALER, POLYURETHANE MEETING THE REQUIREMENTS OF SECTION 524. THE COST OF THE JOINT SEALER, POLYURETHANE SHALL BE INCIDENTAL TO THE ADJACENT CONCRETE.

HAUNCH AND SHEAR CONNECTOR DETAIL



DETAIL OF PILE SPLICE

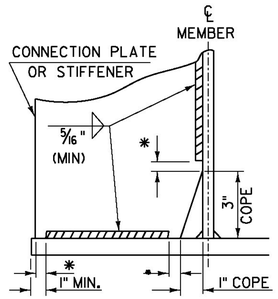
DETAILS ON THIS SHEET ARE "NOT TO SCALE" UNLESS NOTED OTHERWISE.

REVISIONS	
MAY 7, 2010	APPROVED FOR USE BY VAOT STRUCTURES SECTION
JUNE 4, 2010	MODIFIED NOTES

STRUCTURAL STEEL DETAILS & NOTES

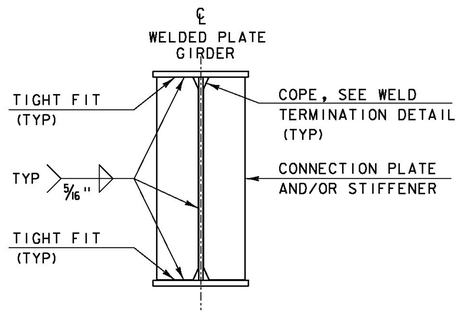
VERMONT AGENCY OF TRANSPORTATION
STRUCTURES - SECTION

STRUCTURES DETAIL
SD-601.00



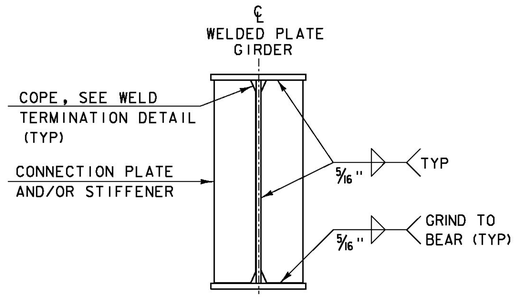
WELD TERMINATION AND COPING DETAILS FOR STEEL MEMBERS

*NO WELD FOR 3/8" MIN. 7/8" MAX. (EXCEPT MUST MAINTAIN 1" MINIMUM FROM EDGE OF FLANGE)

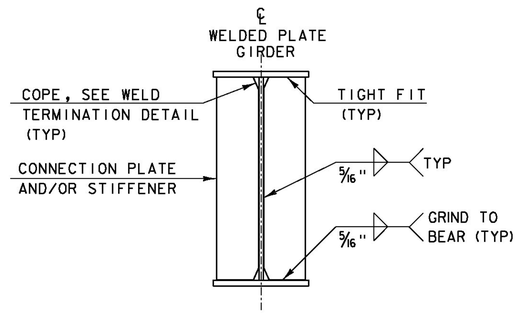


INTERMEDIATE CONNECTION PLATES AND/OR STIFFENERS FOR WELDED PLATE GIRDERS

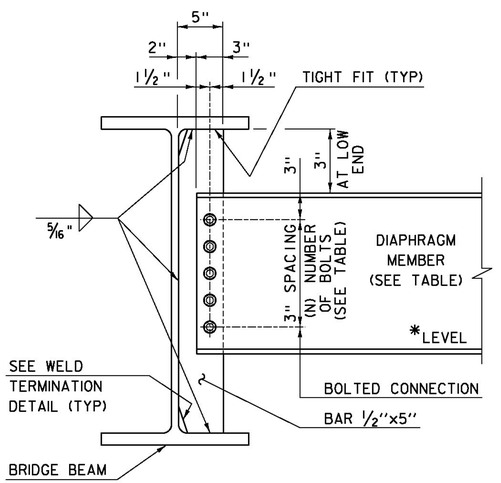
INTERMEDIATE DETAIL IS ONLY USED WHEN PLATE DOES NOT OCCUR AT AN ABUTMENT OR PIER.



ABUTMENT BEARING STIFFENERS AND/OR CONNECTION PLATES FOR WELDED PLATE GIRDERS



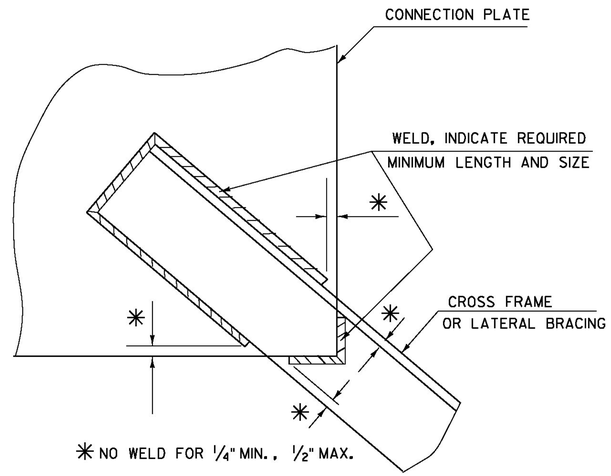
PIER BEARING STIFFENERS AND/OR CONNECTION PLATES FOR WELDED PLATE GIRDERS



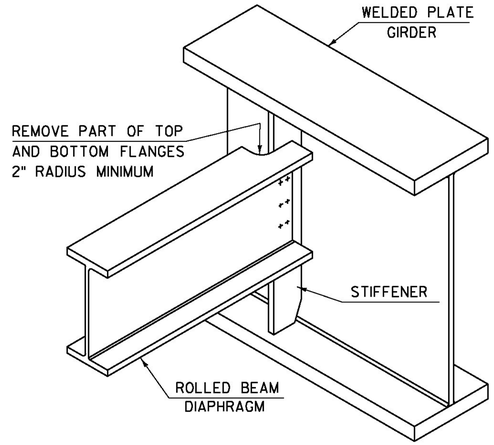
DEPTH		DIAPHRAGM MEMBER	(N) BOLTS
ROLLED BEAM	24" 30"	C15x33.9	4
	31" 36"	MC18x42.7	5
	37" 42"	W21x44	6
PLATE GIRDER WEB	31" 36"	W27x84	7
	37" 42"	W33x118	9
	43" 48"	W36x135	10

INTERMEDIATE DIAPHRAGMS FOR 24" TO 48" BRIDGE BEAMS

* IF CLEARANCE CANNOT BE MET, DIAPHRAGM MAY BE SLOPED.



WELD LOCATION DETAIL AT CROSS FRAMES AND LATERAL BRACING



SEE CONTRACT DRAWINGS FOR SIZES OF MEMBERS AND CONNECTION DETAILS

ROLLED BEAM USED AS DIAPHRAGM

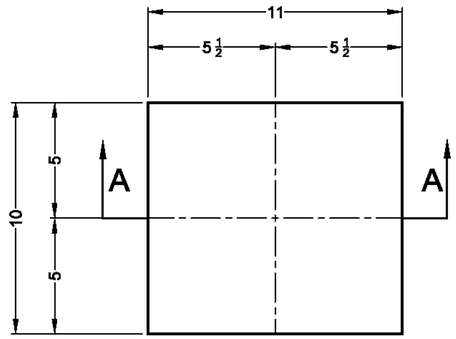
DETAILS ON THIS SHEET ARE "NOT TO SCALE" UNLESS NOTED OTHERWISE.

REVISIONS	
MAY 7, 2010	APPROVED FOR USE BY VAOT STRUCTURES SECTION
MAY 2, 2011	ADD INTERMEDIATE DIAPHRAGMS DETAIL & ADD NOT TO SCALE NOTE

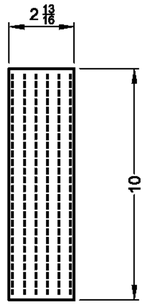
STRUCTURAL STEEL PLATE GIRDER DETAILS AND NOTES

VERMONT AGENCY OF TRANSPORTATION
STRUCTURES - SECTION

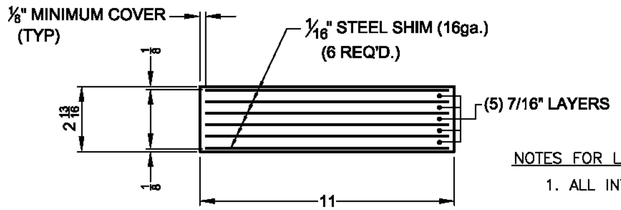
STRUCTURES DETAIL
SD-602.00



PLAN VIEW



SIDE VIEW

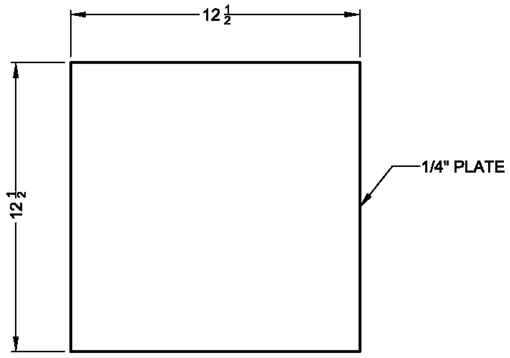


SECTION A-A

QTY. REQ'D. = 8

NOTES FOR LAMINATED ELASTOMERIC BEARING PADS (ITEM NO. 531.17):

1. ALL INTERNAL STEEL SHIMS SHALL BE ASTM A1011 GRADE 36
2. BEARINGS TO BE MANUFACTURED ACCORDING TO AASHTO LRFD STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SECTION 14 & 18, 17th. EDITION, 2002 AND 2010 INTERIMS. BEARINGS SHALL ALSO CONFORM TO VT AOT APPLICABLE SUBSECTIONS OF SECTIONS 531 AND 731.
3. ELASTOMERIC NATURAL RUBBER MATERIAL TO BE 50+/−5 DUROMETER HARDNESS, GR. 4
4. ALL STEEL PRODUCED IN THE U.S.A.
5. THE BEARINGS ARE DESIGNED SO THAT THE SUPERSTRUCTURE MAY BE ERECTED WHEN THE AMBIENT AIR TEMPERATURE IS WITHIN THE RANGE OF 40 DEG. F. TO 90 DEG. F.
6. ALL LOOSE STEEL SHIMS SHALL BE ASTM GRADE 36 AND SHALL BE GALVANIZED.



SHIM PLATE

QTY. REQ'D. = 8

GALVANIZED

REVISIONS					
ZONE	REV	DESCRIPTION	REVISED BY	DATE	APPROVED

VERMONT AOT
TOWN OF MIDDLESEX
WASHINGTON COUNTY, VERMONT

PROJECT NO. : BRF-024-1 (37)

ROUTE NO. : VT 12 | BRIDGE NO. : 77

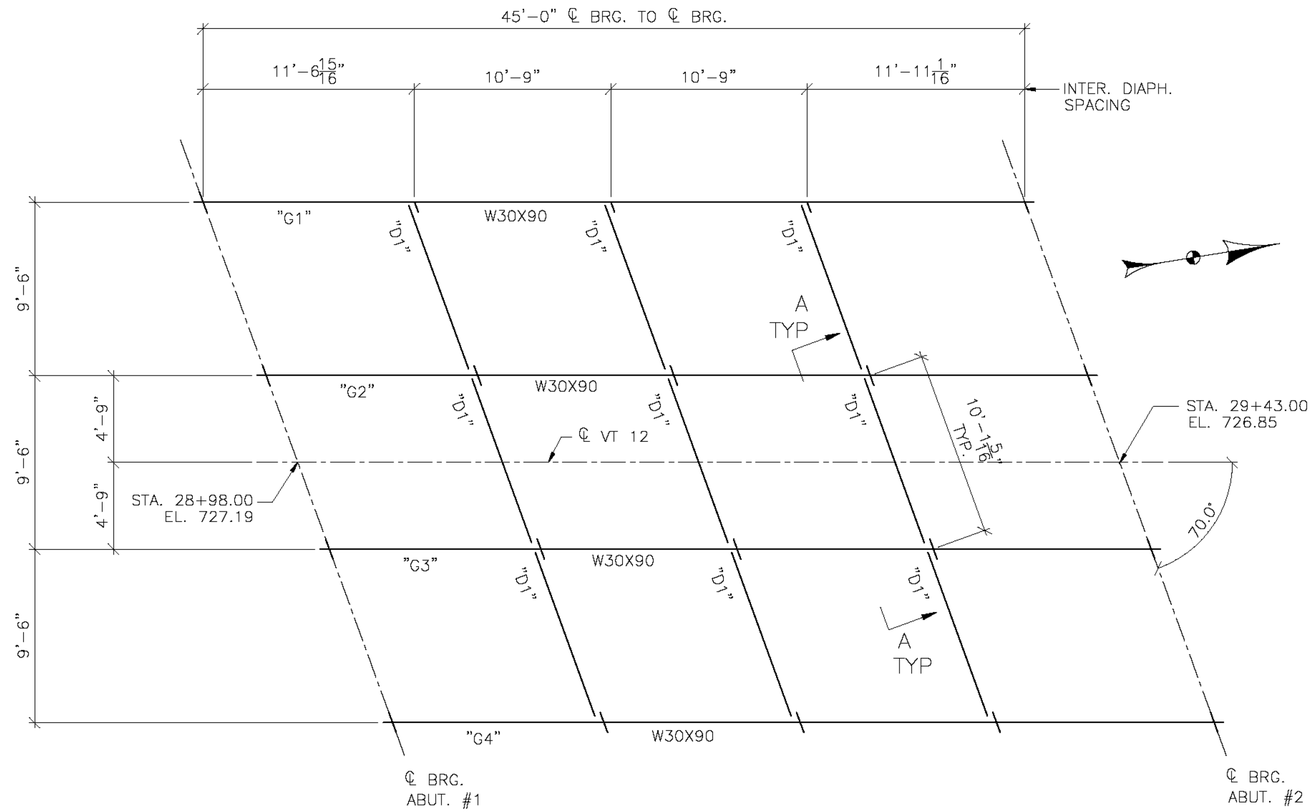
STEEL REINFORCED ELASTOMERIC BEARING PAD & LOOSE SHIM DETAILS

AMSCOT
STRUCTURAL PRODUCTS CORP.

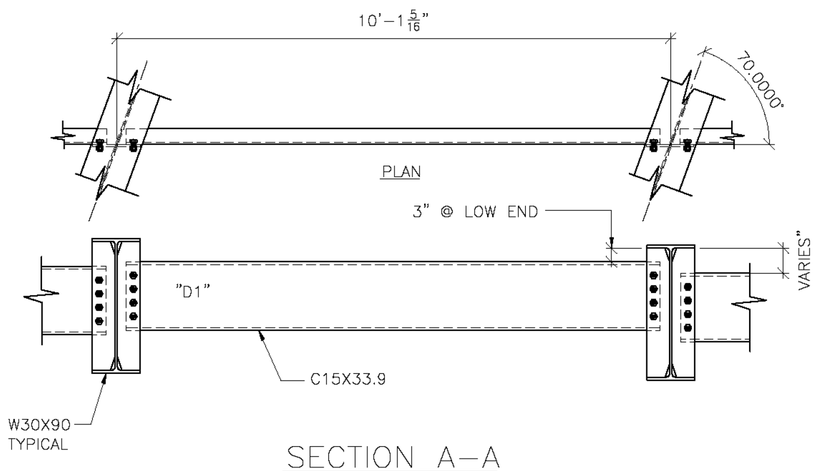
SCALE: N.T.S.	APPRV'D:	DRAWN BY: E.J.G.
DATE: 4/21/15	BF	REVISION: 0

FOR: A.L. St. ONGE

DWG NO: ASO15C1R0 | SHEET 1 OF 1



FRAMING PLAN



SECTION A-A

GENERAL NOTES:

ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO STATE OF VERMONT AGENCY OF TRANSPORTATION'S STANDARD SPECIFICATIONS FOR CONSTRUCTION, DATED 2011, AND IT'S LATEST REVISIONS, AND THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 5TH EDITION AND IT'S LATEST REVISIONS.

ALL MATERIAL SHALL CONFORM TO AASHTO M270 (ASTM A709) GRADE 50. ALL MATERIAL NOTED "CVN" SHALL MEET THE CHARPY V-NOTCH TESTING REQUIREMENTS OF ZONE 2, H FREQUENCY: 15 FT.-LB AT 40° F. NDT MUST BE ACCORDING TO ANSI/AASHTO/AWS D1.5, SECTION 6

ALL BOLTS SHALL BE $\frac{7}{8}$"ø IN $\frac{15}{16}$"ø HOLES AND CONFORMING TO ASTM A325, TYPE 1 WITH RQ-CAP TESTING AND MECHANICALLY GALVANIZED.

1 INCLUDING ADDITIONAL BOLT TESTING PER VTRANS SUBSECTION 714.05

ALL STEEL SHALL BE GALVANIZED IN ACCORDANCE WITH VTRANS SUBSECTION 726.08 AFTER FABRICATION.

FIELD BOLT LIST

MARK	QTY.	DESCRIPTION	LOCATION
FB3	72	$\frac{7}{8}$"øX2$\frac{1}{4}$	INTER. DIAPH. TO CONN. PL
	72	DIRECT TENSION INDICATORS + THREE (3) TEST ASSEMBLIES	

Vermont Agency of Transportation
RECEIVED
CK'D BY FDB OK'D BY CLB
May 29, 2015
RESUBMIT No Approved AsNoted
BY Carolyn Carlson DATE 06/02/15

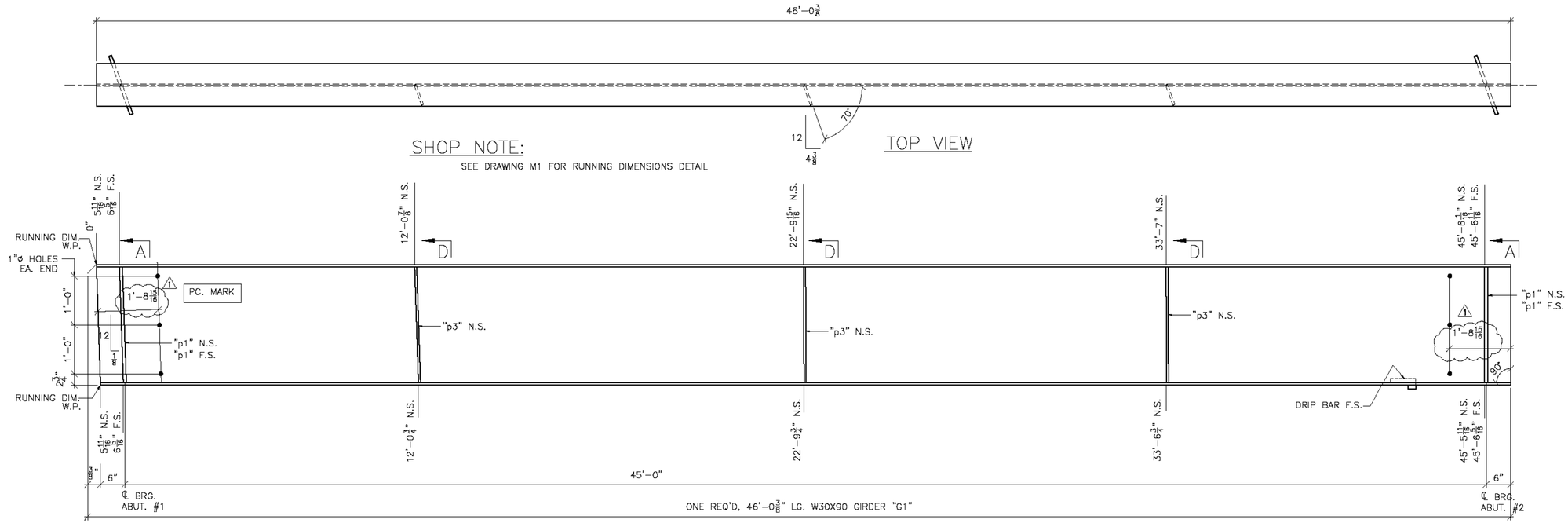
FINISH					
MATERIAL	SEE DETAIL SHEETS				
HOLES					
ELECTRODES					
WELDS	PER WPS				
SURFACE PREP		1	5/27/15	PER APPROVAL	JAC
		NO	DATE	DESCRIPTION	BY
		REVISIONS			

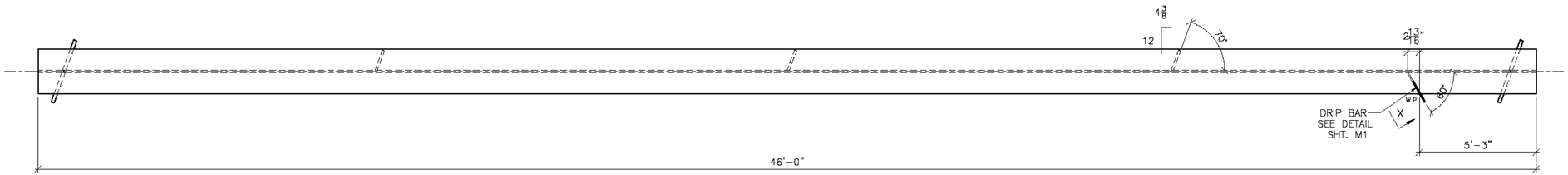
ARC ENTERPRISES, INC.

ADVANCED RESOURCES & CONST. ENTERPRISES, INCORPORATED
P.O. BOX 120 KINGFIELD, ME. 04947
PHONE: (207) 265-2648 - FAX: (207) 265-4054

DRAFTER JAC	FRAMING PLAN		PROJECT NO. 15-114
DATE 5/11/15	TOWN OF MIDDLESEX, VT 12 (RURAL MAJOR COLLECTOR) PROJECT NUMBER BRF 024-1(37)		
CHECKED JS			DWG. NO. 1
DATE 5/14/15	CC: AL ST. ONGE CONTRACTOR, INC.		

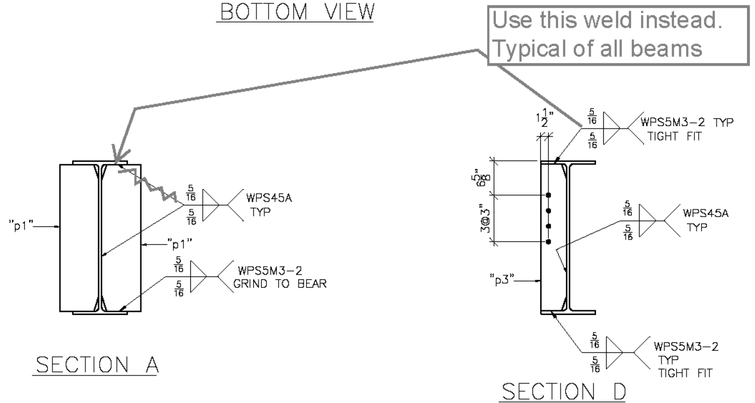
J.A.C. DRAFTING/S55B15/1





BOTTOM VIEW

Use this weld instead.
Typical of all beams



BILL OF MATERIAL

SHIP	SHIP MARK	NO. PCS.	PIECE MARK	DESCRIPTION	LENGTH	REMARKS	WT.	
1	G1			GIRDER			4377	
		1		W30X90	46'-0 3/8"	CVN	4140	
		4	p1	SEE SHT. M1				
		3	p3	SEE SHT. M1				
		1	dp1	1/4" THK. DRIP BAR SEE SHT. M1				

Vermont Agency of Transportation
RECEIVED
CK'D BY FDB OK'D BY CLB
May 29, 2015
RESUBMIT No Approved AsNoted
BY Carolyn Carlson DATE 06/02/15

SHOP NOTE:
ENTIRE TOP FLANGE IS IN COMPRESSION
ENTIRE BOTT FLANGE IS IN TENSION

FINISH	GALVANIZED			
MATERIAL	AASHTO M270 (ASTM A709) GR. 50 U.O.N.			
HOLES	15/16"ø U.O.N.			
ELECTRODES				
WELDS	PER WPS			
SURFACE PREP	SSPC SP6	1	5/27/15	PER APPROVAL JAC
		NO	DATE	DESCRIPTION BY

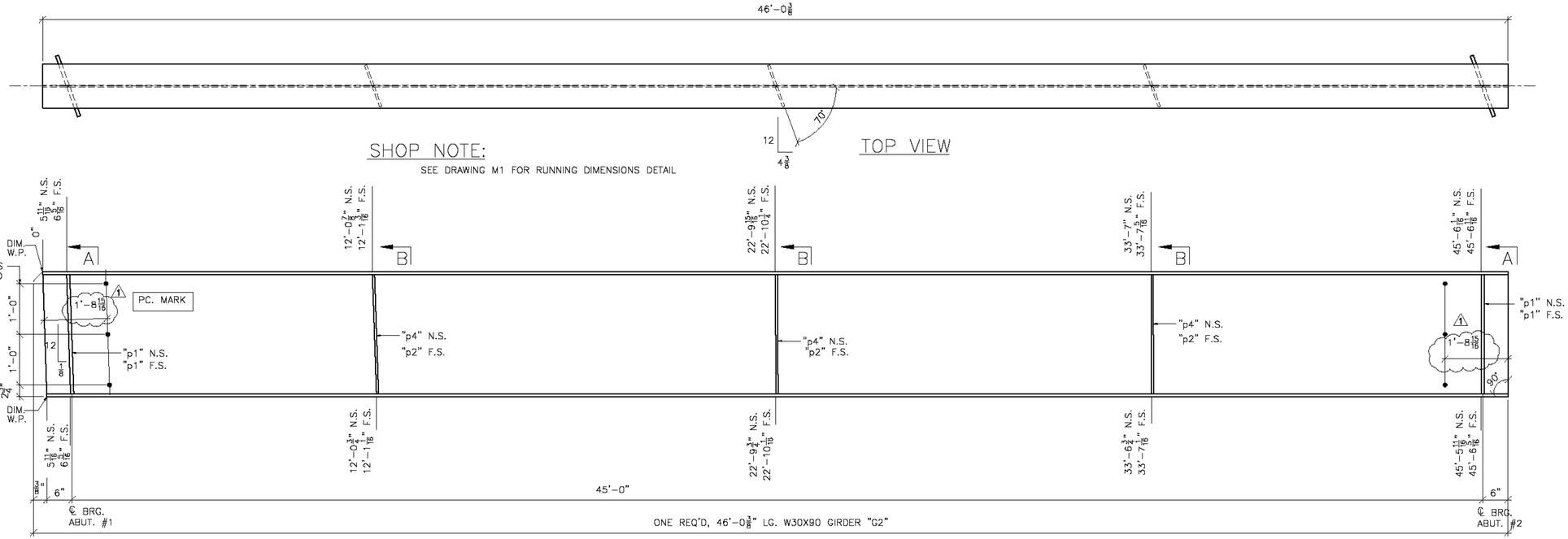
REVISIONS

ARC ENTERPRISES, INC.

ADVANCED RESOURCES & CONST. ENTERPRISES, INCORPORATED
P.O. BOX 120 KINGFIELD, ME. 04947
PHONE: (207) 265-2645 - FAX: (207) 265-4054

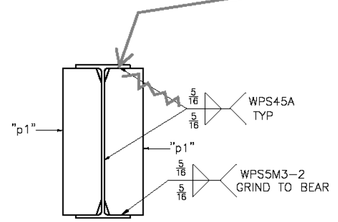
DRAFTER	JAC	STRINGER DETAILS, G1	PROJECT NO. 15-114
DATE	5/11/15	TOWN OF MIDDLESEX, VT 12 (RURAL MAJOR COLLECTOR) PROJECT NUMBER BRF 024-1(37)	
CHECKED	JS	G.C. AL ST. ONGE CONTRACTOR INC.	DWG. NO. 2
DATE	5/14/15		

SEE SHEET M1 FOR CAMBER AND SECTIONS & DETAILS NOT SHOWN

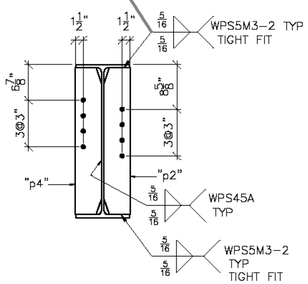


BOTTOM VIEW

Use this weld instead.
Typical of all beams



SECTION A



SECTION B

BILL OF MATERIAL

SHIP	SHIP MARK	NO. PCS.	PIECE MARK	DESCRIPTION	LENGTH	REMARKS	WT.
1	G2			GIRDER			4436
		1		W30X90	46'-0 3/8"	CVN	4140
		4	p1	SEE SHT. M1			
		3	p2	SEE SHT. M1			
		3	p4	SEE SHT. M1			

Vermont Agency of Transportation
RECEIVED
CK'D BY FDB OK'D BY CLB
May 29, 2015
RESUBMIT No **Approved AsNoted**
BY Carolyn Carlson DATE 06/02/15

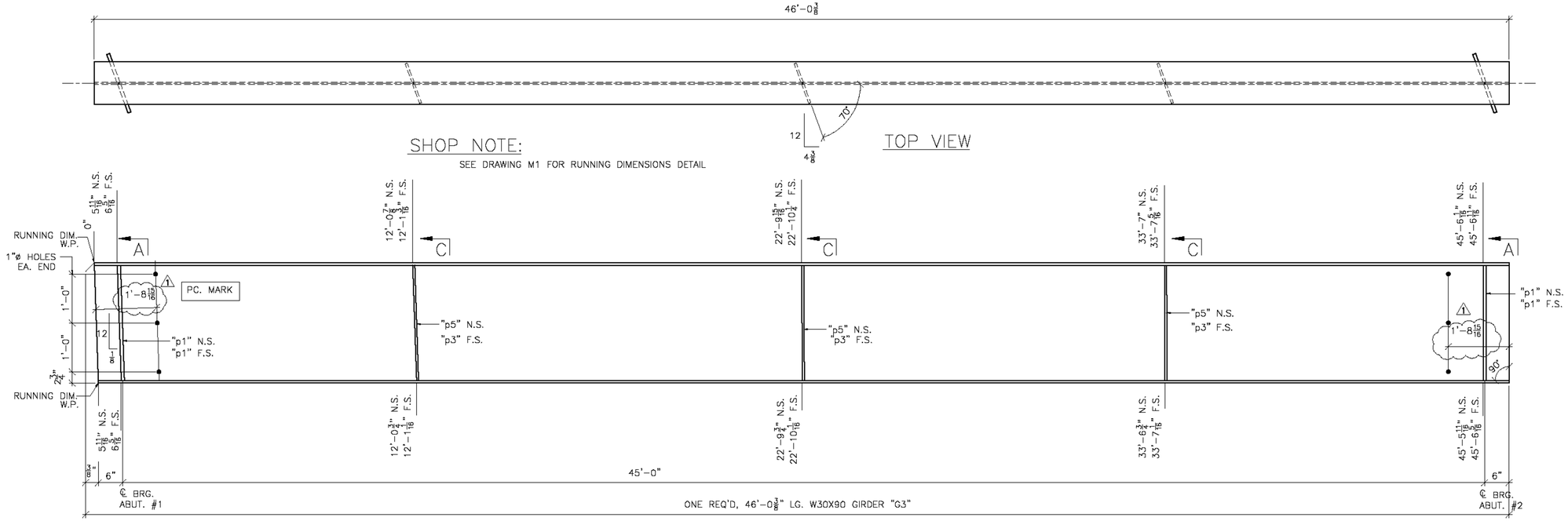
SHOP NOTE:
ENTIRE TOP FLANGE IS IN COMPRESSION
ENTIRE BOTT FLANGE IS IN TENSION

FINISH	GALVANIZED			
MATERIAL	AASHTO M270 (ASTM A709) GR. 50 U.O.N.			
HOLES	15/15"ø U.O.N.			
ELECTRODES				
WELDS	PER WPS			
SURFACE PREP	SSPC SP6	1	5/27/15	PER APPROVAL JAC
		NO	DATE	DESCRIPTION BY
		REVISIONS		

ARC ENTERPRISES, INC.
ADVANCED RESOURCES & CONST. ENTERPRISES, INCORPORATED
P.O. BOX 120 KINGFIELD, ME. 04947
PHONE: (207) 265-2646 - FAX: (207) 265-4054

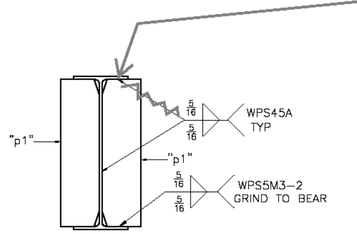
DRAFTER	JAC	STRINGER DETAILS, G2	PROJECT NO. 15-114
DATE	5/11/15	TOWN OF MIDDLESEX, VT 12 (RURAL MAJOR COLLECTOR) PROJECT NUMBER BRF 024-1(37)	
CHECKED	JS	G.C. AL ST. ONGE CONTRACTOR INC.	DWG. NO. 3
DATE	5/14/15		

SEE SHEET M1 FOR CAMBER AND SECTIONS & DETAILS NOT SHOWN

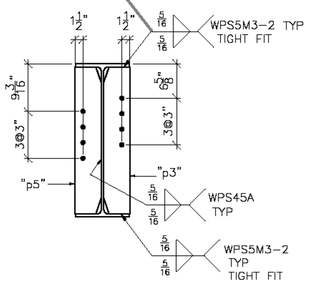


BOTTOM VIEW

Use this weld instead. Typical of all beams



SECTION A



SECTION C

SHOP NOTE:
ENTIRE TOP FLANGE IS IN COMPRESSION
ENTIRE BOTT FLANGE IS IN TENSION

BILL OF MATERIAL

SHIP	SHIP MARK	NO. PCS.	PIECE MARK	DESCRIPTION	LENGTH	REMARKS	WT.
1	G3			GIRDER			4436
		1		W30X90	46'-0 3/8"	CVN	4140
		4	p1	SEE SHT. M1			
		3	p5	SEE SHT. M1			
		3	p3	SEE SHT. M1			

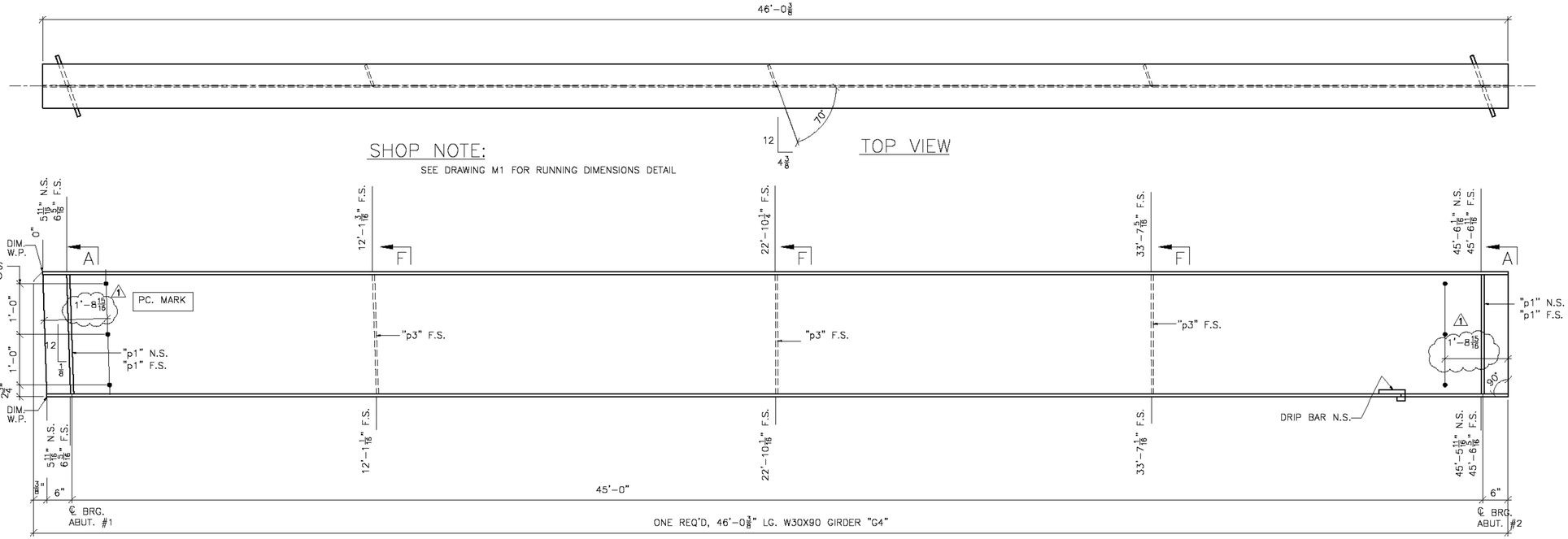
Vermont Agency of Transportation
RECEIVED
CK'D BY FDB OK'D BY CLB
May 29, 2015
RESUBMIT No **Approved AsNoted**
BY Carolyn Carlson DATE 06/02/15

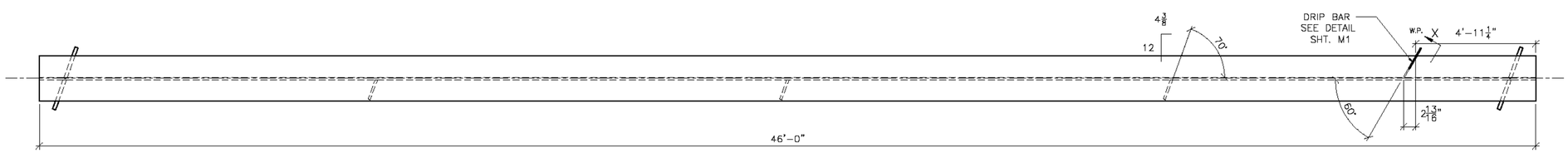
SEE SHEET M1 FOR CAMBER AND SECTIONS & DETAILS NOT SHOWN

FINISH	GALVANIZED			
MATERIAL	AASHTO M270 (ASTM A709) GR. 50 U.O.N.			
HOLES	15/16"ø U.O.N.			
ELECTRODES				
WELDS	PER WPS			
SURFACE PREP	SSPC SP6	1	5/27/15	PER APPROVAL JAC
		NO	DATE	DESCRIPTION BY
		REVISIONS		

ARC ENTERPRISES, INC.
ADVANCED RESOURCES & CONST. ENTERPRISES, INCORPORATED
P.O. BOX 120 KINGFIELD, ME. 04947
PHONE: (207) 265-2646 – FAX: (207) 265-4054

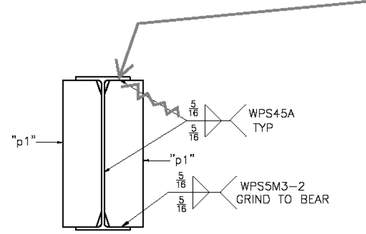
DRAFTER	JAC	STRINGER DETAILS, G3	PROJECT NO. 15-114
DATE	5/11/15	TOWN OF MIDDLESEX, VT 12 (RURAL MAJOR COLLECTOR) PROJECT NUMBER BRF 024-1(37)	
CHECKED	JS	G.C. AL ST. ONGE CONTRACTOR INC.	DWG. NO. 4
DATE	5/14/15		



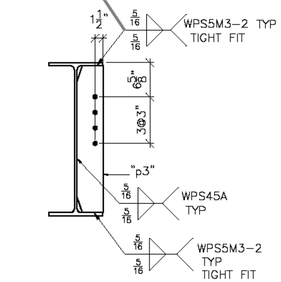


BOTTOM VIEW

Use this weld instead. Typical of all beams



SECTION A



SECTION F

BILL OF MATERIAL

SHIP	SHIP MARK	NO. PCS.	PIECE MARK	DESCRIPTION	LENGTH	REMARKS	WT.	
1	G4			GIRDER			4377	
		1		W30X90	46'-0 3/8"	CVN	4140	
		4	p1	SEE SHT. M1				
		3	p3	SEE SHT. M1				
		1	dp1	1/4" THK. DRIP BAR SEE SHT. M1				

Vermont Agency of Transportation

RECEIVED

CK'D BY FDB OK'D BY CLB

May 29, 2015

RESUBMIT No **Approved AsNoted**

BY Carolyn Carlson DATE 06/02/15

SHOP NOTE:

ENTIRE TOP FLANGE IS IN COMPRESSION

ENTIRE BOTT FLANGE IS IN TENSION

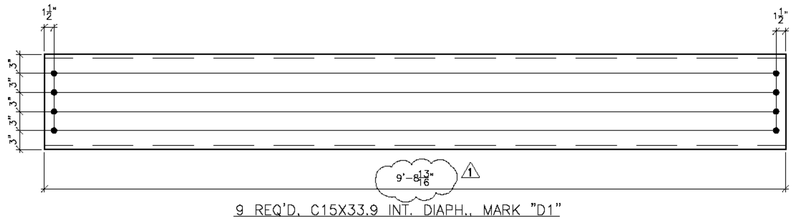
FINISH	GALVANIZED			
MATERIAL	AASHTO M270 (ASTM A709) GR. 50 U.O.N.			
HOLES	15/15"ø U.O.N.			
ELECTRODES				
WELDS	PER WPS			
SURFACE PREP	SSPC SP6	1	5/27/15	PER APPROVAL JAC
		NO	DATE	DESCRIPTION BY
		REVISIONS		

ARC ENTERPRISES, INC.

ADVANCED RESOURCES & CONST. ENTERPRISES, INCORPORATED
P.O. BOX 120 KINGFIELD, ME. 04947
PHONE: (207) 265-2646 - FAX: (207) 265-4054

DRAFTER	JAC	STRINGER DETAILS, G4	PROJECT NO. 15-114
DATE	5/11/15	TOWN OF MIDDLESEX, VT 12 (RURAL MAJOR COLLECTOR) PROJECT NUMBER BRF 024-1(37)	
CHECKED	JS	G.C. AL ST. ONGE CONTRACTOR INC.	DWG. NO. 5
DATE	5/14/15		

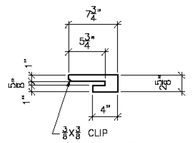
SEE SHEET M1 FOR CAMBER AND SECTIONS & DETAILS NOT SHOWN



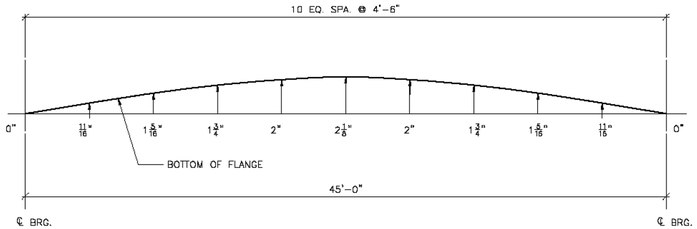
9 REQ'D. C15X33.9 INT. DIAPH., MARK "D1"

BILL OF MATERIAL

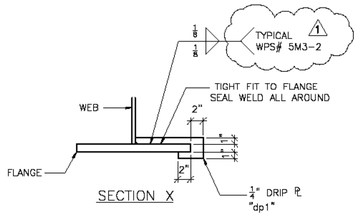
SHIP	SHIP MARK	NO. PCS.	PIECE MARK	DESCRIPTION	LENGTH	REMARKS	WT.
		16	p1	PL ¾X7½	2'-4 5/16"		712
		3	p2	PL ½X5	2'-4 5/16"		59
		9	p3	PL ½X5	2'-4 5/16"		177
		3	p4	PL ½X5	2'-4 5/16"		59
		3	p5	PL ½X5	2'-4 5/16"		59
		2	dp1	PL ¼X2⅝	0'-7¾"		2
1	D1	9		C15X33.9	9'-8 13/16"		2975



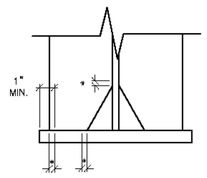
2 REQ'D. ¼" DRIP PL, MARK "dp1"



CAMBER DIAGRAM

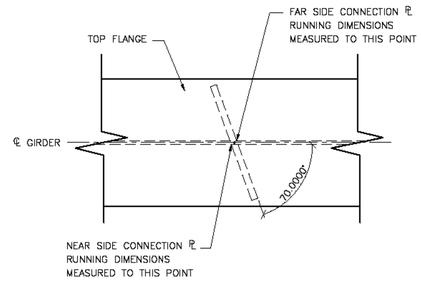


SECTION X

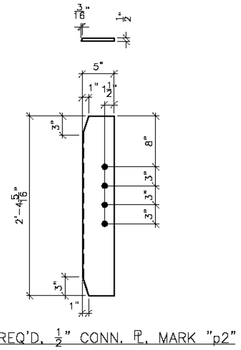


WELD TERMINATION DETAIL

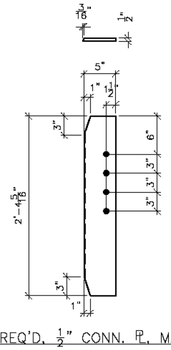
* NO WELD FOR ⅜" MIN. ⅞" MAX.



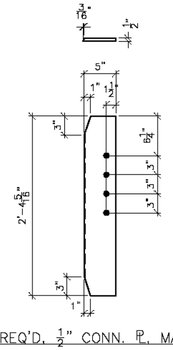
RUNNING DIMENSIONS DETAIL



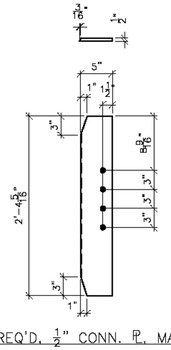
3 REQ'D. ½" CONN. PL, MARK "p2"



9 REQ'D. ½" CONN. PL, MARK "p3"



3 REQ'D. ½" CONN. PL, MARK "p4"



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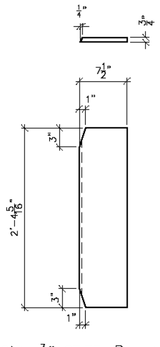
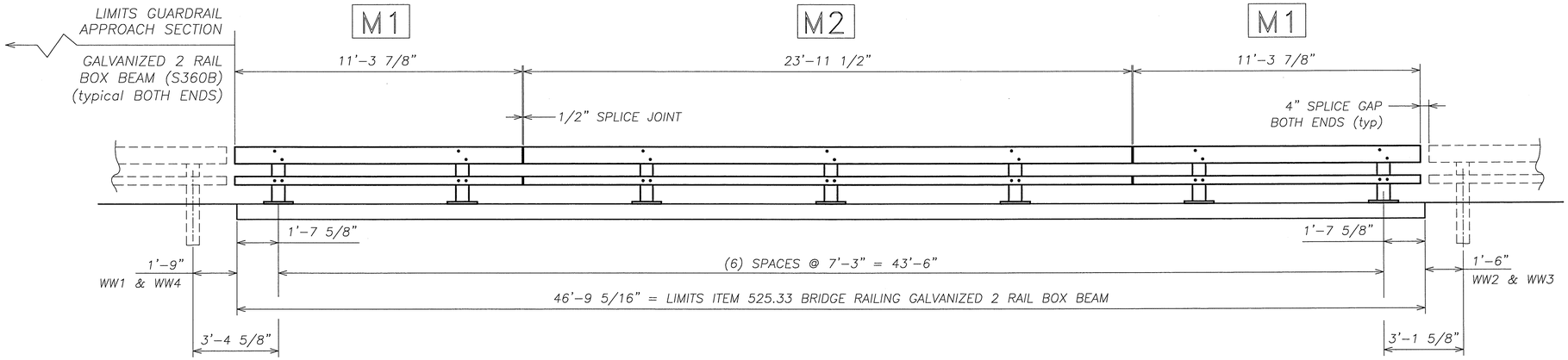


16 REQ'D. ¾" STIFF. PL, MARK "p1"

FINISH	GALVANIZED				
MATERIAL	ASTM A709 GRADE 50 U.O.N.				
HOLES	15/16"ø U.O.N.				
ELECTRODES					
WELDS	PER WPS				
SURFACE PREP	SSPC SP6	1	5/27/15	PER APPROVAL	JAC
		NO	DATE	DESCRIPTION	BY
		REVISIONS			

ARC ENTERPRISES, INC.
ADVANCED RESOURCES & CONST. ENTERPRISES, INCORPORATED
P.O. BOX 120 KINGFIELD, ME. 04947
PHONE: (207) 265-2648 – FAX: (207) 265-4054

DRAFTER	JAC	MISC. DETAILS	PROJECT NO.
DATE	5/11/15	TOWN OF MIDDLESEX, VT 12 (RURAL MAJOR COLLECTOR)	15-114
CHECKED	JS	PROJECT NUMBER BRF 024-1(37)	DWG. NO.
DATE	5/14/15	CUSTOMER: AL ST. ONGE CONTRACTOR, INC.	M1



TYPICAL RAILING ELEVATION

LOOKING AT FACE OF RAILING FROM CENTERLINE OF ROAD
BOTH SIDES TYPICAL

BILL OF MATERIAL

Qty	mk	Description	Spec.
94 LF		ITEM 525.33 BRIDGE RAILING, GALVANIZED, 2 RAIL BOX BEAM	
14		BRIDGE RAILING POST W6 x 25 x 2'-2.375" OAH WITH 1 x 10 x 14 BASE PLATE (GLV)	A709 gr 50
4		SPLICE TUBE (FOR 8X4 RAIL) HSS 7 x 3 x 3/8 x 1'-8.000" OAL w/ TAPPED HOLES & 2 WELDED NUTS (GLV)	A500 gr B
4		SPLICE TUBE (FOR 4X4 RAIL) HSS 3 x 3 x 5/16 x 1'-8.000" OAL w/ TAPPED HOLES & 2 WELDED NUTS (GLV)	A500 gr B
4	M1	RAIL TUBE HSS 8 x 4 x 5/16 x 11 ft - 3.875 in OAL - FIX splice 1 end, EXP splice 1 end (GLV)	A500 gr B
2	M2	RAIL TUBE HSS 8 x 4 x 5/16 x 23 ft - 11.5 in OAL - FIX splice both ends (GLV)	A500 gr B
4	M1	RAIL TUBE HSS 4 x 4 x 1/4 x 11 ft - 3.875 in OAL - FIX splice 1 end, EXP splice 1 end (GLV)	A500 gr B
2	M2	RAIL TUBE HSS 4 x 4 x 1/4 x 23 ft - 11.5 in OAL - FIX splice both ends (GLV)	A500 gr B
14		ANCHOR SPACER PLATE PL 0.375 x 13.000 x 9.375	A709 gr 36
56		ANCHOR STUD DBL END PART THREAD - 1" DIA x 12.000 w/ 2.250" THD EACH END (GLV)	A449
112		HEAVY HEX NUT 1" (GLV)	A563 DH
56		ROUND WASHER (SAE) - 1" DIA SMALL (GLV)	F436
56		JAM NUT 1" (GALV)	A563 DH
56		ROUND HEAD POST BOLT slot or wrench head - no shoulder 3/4" DIA x 6" LG. FULL BODY (GLV)	A449 / A325
56		LOCK NUT 3/4" (GLV)	A563 DH
56		ROUND WASHER (SAE) 3/4" (GLV)	F436
32		HEX HEAD BOLT 5/8" DIA x 1.75" LG. (GLV)	A325
32		ROUND WASHER (SAE) 5/8" (GLV)	F436
14		BEARING PAD 0.125" THICK x 10.000 x 14.000 (NEOPRENE 80 duro +/-10)	aashto M251

Vermont Agency of Transportation

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CK'D BY FDB OK'D BY HIS

May 29, 2015

RESUBMIT No **Approved**

BY Carolyn Carlson DATE 6/2/2015

No.	Remarks	Date
A	review corrections	5/22/15
0	initial submittal	05-07-15

REVISIONS

HIGHWAY SAFETY CORP
GLASTONBURY, CT
860-633-9445

ITEM 525.33 BRIDGE RAILING, GALVANIZED 2 RAIL BOX BEAM (S-360A)
ITEM 621.72 GUARDRAIL APPROACH SECTION, GALVANIZED 2 RAIL BOX BEAM (S-360B)
BRF 024-1(37)
VT ROUTE 12 – BRIDGE 77
TOWN OF MIDDLESEX, WASHINGTON COUNTY VT

CERTIFIED FABRICATOR

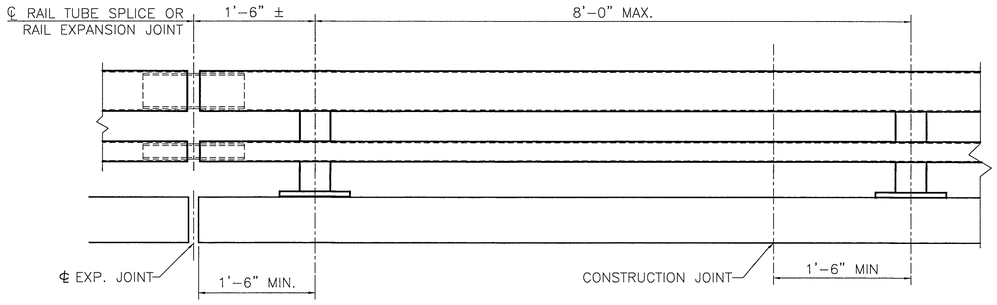
HSC JOB NO. 2048

GENERAL CONTRACTOR

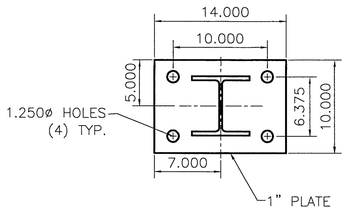
SUB CONTRACTOR LAFAYETTE

SHEET NO. 1 of 3

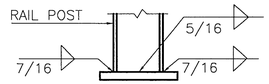
DRAWN PAR CHECKED DATE 05-07-15 SCALE NONE SIZE D



BRIDGE RAILING ELEVATION



POST AND BASE PLATE



BASE WELD DETAIL

NOTES:

1. ALL WORK AND MATERIALS SHALL CONFORM TO SECTION 525.

2. PRIOR TO GALVANIZING, ALL EXPOSED CUT OR SHEARED EDGES SHALL BE ROUNDED TO A 1/16" RADIUS AND BE FREE OF BURRS.

3. ALL POSTS SHALL BE SET NORMAL TO GRADE.

4. SECTIONS OF RAIL TUBE SHALL BE ATTACHED TO A MINIMUM OF TWO (2) RAIL POSTS AND PREFERABLY TO AT LEAST FOUR (4) POSTS.

5. RAIL TUBE EXPANSION JOINT SHALL BE PROVIDED IN ANY RAIL BAY SPANNING THE END OF AN INTEGRAL ABUTMENT BRIDGE AND AT ALL SUPERSTRUCTURE EXPANSION JOINTS. EXPANSION JOINT WIDTH SHALL BE 4" AT 45°F AND WILL BE ADJUSTED IN THE FIELD BY THE ENGINEER FOR OTHER TEMPERATURES.

Ⓐ 6. HOLES IN RAILS FOR RAIL TUBE ATTACHMENT SHALL BE FIELD-DRILLED. HOLES SHALL BE COATED WITH AND APPROVED ZINC-RICH PAINT PRIOR TO INSTALLATION.

7. RAIL POST ANCHORING NUTS SHALL BE TIGHTENED TO A SNUG FIT AND GIVEN AN ADDITIONAL ONE-EIGHTH TURN.

8. RAIL TUBES SHALL BE ATTACHED USING 3/4" FULL DIAMETER BODY ASTM A449 ROUND HEAD BOLTS INSERTED THROUGH THE FACE OF THE TUBE. HOLES IN POSTS SHALL BE 1/16" LARGER THAN THE BOLT SIZE.

9. ANY BENDING OR CURVING OF RAIL SHALL BE DONE IN A FABRICATION PLANT IN ACCORDANCE WITH SUBMITTED PROCEDURES.

10. THE MINIMUM DISTANCE FROM A POST TO AN EXPANSION JOINT SHALL BE SUCH TO MAINTAIN MINIMUM EDGE DISTANCE OF 5" FROM ANY ANCHOR STUD TO THE END OF THE SLAB, OR TO THE EXPANSION JOINT RECESS POUR, IF ONE IS USED.

11. A DELINEATOR (SEE VAOT STANDARD DRAWING G-1 FOR DETAILS) SHALL BE INSTALLED AT NEAREST POST TO 30 FT SPACING. WHITE IS TO BE INSTALLED ON THE DRIVER'S RIGHT. FOR ONE WAY BRIDGES, YELLOW IS TO BE INSTALLED ON THE DRIVER'S LEFT. PAYMENT SHALL BE INCIDENTAL TO OTHER ITEMS.

12. THIS RAILING MEETS THE REQURIEMENTS FOR A TL-4 SERVICE LEVEL.

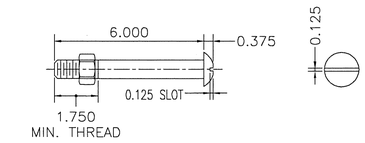
MATERIALS
RAIL TUBES.....ASTM A500 GRADE B OR ASTM A501
RAIL POSTS AND BASE PLATES.....ASTM A709/A709M, GRADE 50
ALL OTHER SHAPES AND PLATES.....ASTM A709/A709M, GARDE 36
ANCHOR STUDS.....ASTM A449
ALL OTHER BOLTS (UNLESS NOTED).....AASHTO M164, TYPE1

NUTS FOR AASHTO M164 BOLTS AND FOR ANCHOR STUDS SHALL COMPLY WITH AASTHO M291 (ASTM A563).

WASHERS SHALL COMPLY WITH AASHTO M293 (ASTM F436) SPECIFCATIONS.

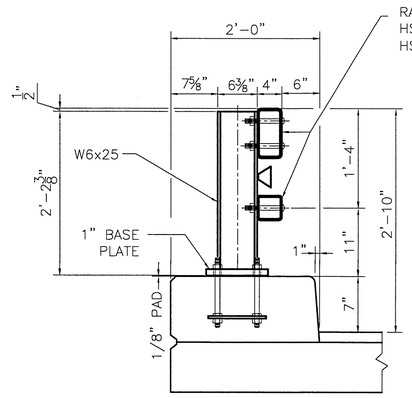
1/8" PAD SHALL COMPLY WITH STANDARD SPECIFICATION SUBSECTION 731.01 OR 731.02.

RAIL POSTS AND BASE PLATES SHALL BE TESTED FOR IMPACT PROPERTIES IN ACCORDANCE WITH ASTM A370 CHARPY IMPACT TESTING USING TYPE A SPECIMEN.

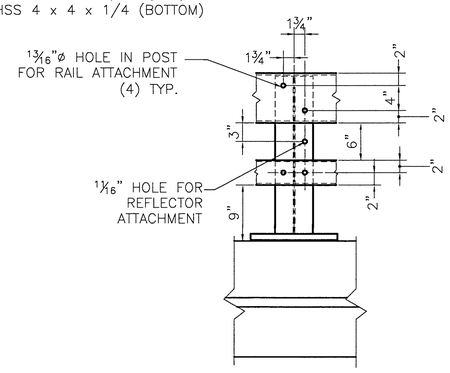


3/4" DIA. A449
ROUND HEAD BOLT

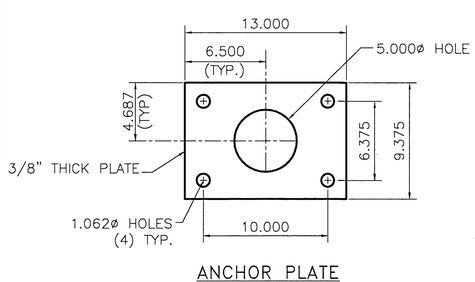
(WITH WASHER AND PREVAILING TORQUE TYPE LOCK NUT)
(SEE NOTE #8)
ONLY FULL DIAMETER BODY BOLTS WILL BE ALLOWED.



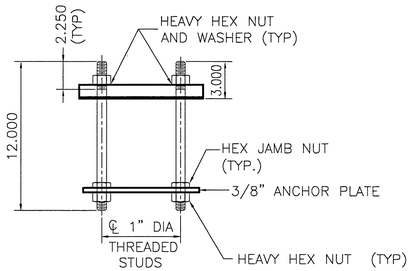
TYPICAL SECTION



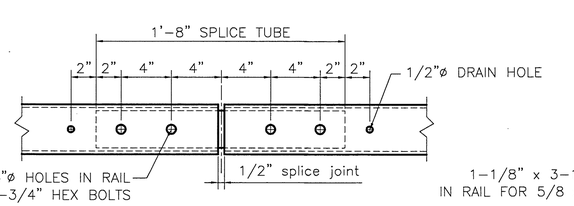
ELEVATION



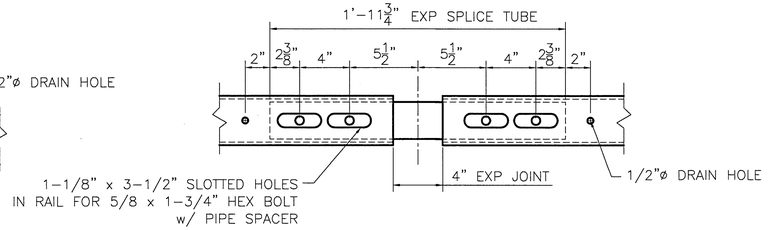
ANCHOR PLATE



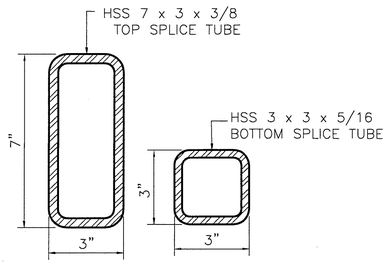
RAIL POST ANCHORAGE



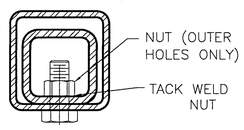
FIXED SPLICE JOINT DETAIL
BOTTOM VIEW



EXPANSION SPLICE DETAIL
BOTTOM VIEW

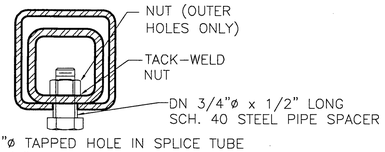


RAIL TUBE SPLICE SECTION



5/8"ø TAPPED HOLE IN SPLICE TUBE & 3/4"ø HOLE IN RAIL TUBE FOR BOLT & PLAIN HARDENED WASHER

FIXED SPLICE JOINT SECTION



5/8"ø TAPPED HOLE IN SPLICE TUBE AND 1 1/8" x 3.500 SLOT IN RAIL TUBE FOR BOLT AND PLAIN HARDENED WASHER

EXPANSION JOINT SECTION Ⓐ

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CK'D BY FDB OK'D BY HIS
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BY Carolyn Carlson DATE 6/2/2015

HIGHWAY SAFETY CORP
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ITEM 525.33 BRIDGE RAILING, GALVANIZED 2 RAIL BOX BEAM (S-360A)
BRF 024-1(37)
VT ROUTE 12 - BRIDGE 77
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GENERAL CONTRACTOR
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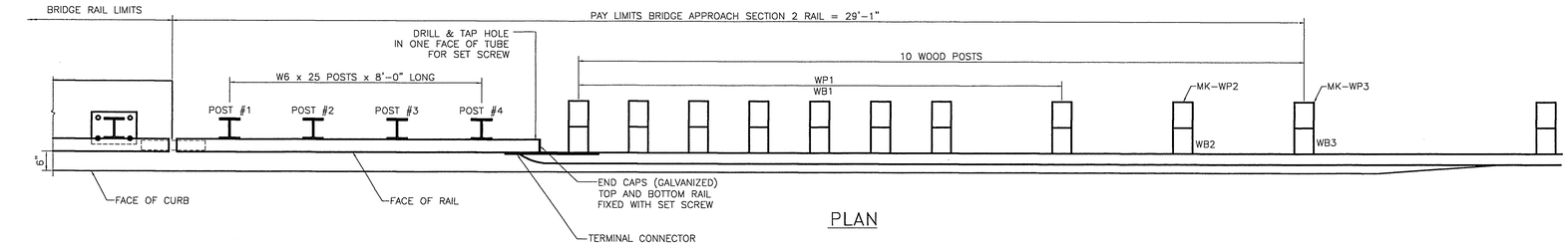
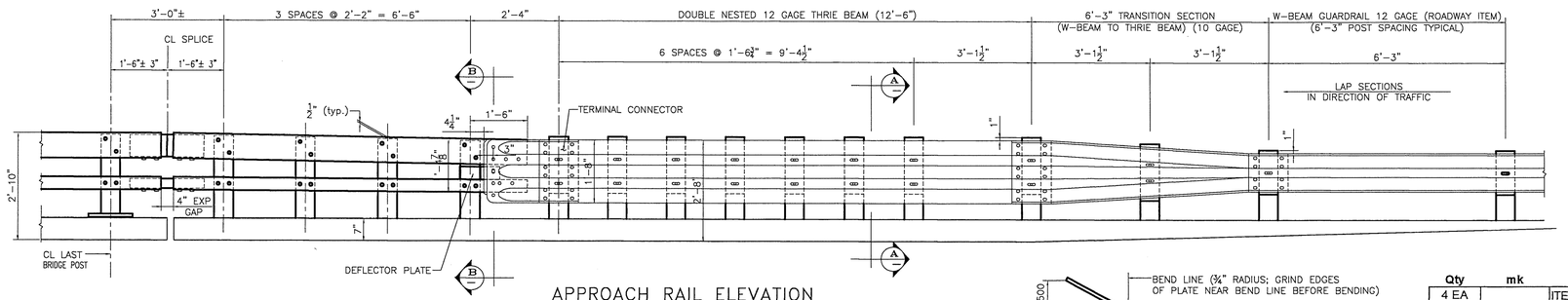
HSC JOB NO. 2048
SHEET NO. 2 of 3

DRAWN	CHECKED	DATE	SCALE	SIZE
PAR		05-07-15	NONE	D

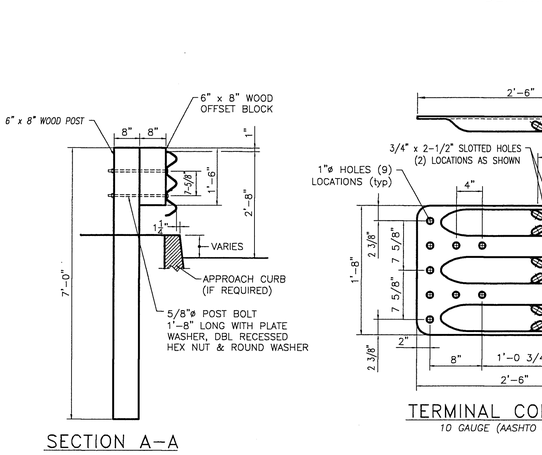


PLAN



APPROACH RAIL ELEVATION

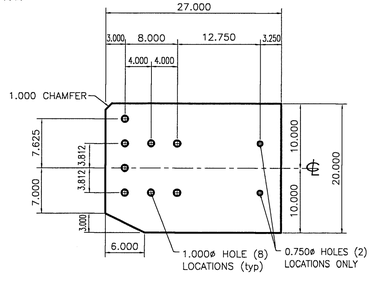
LEADING END (RIGHT) IS SHOWN
DEPARTURE END (LEFT) SIMILAR BUT OPPPOSITE HAND



SECTION A–A

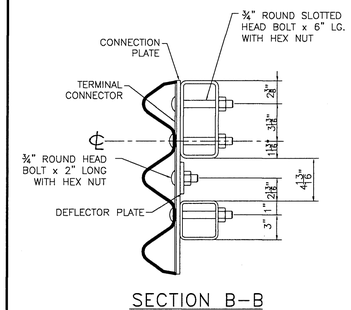
TERMINAL CONNECTOR

10 GAUGE (AASHTO M180 B2)

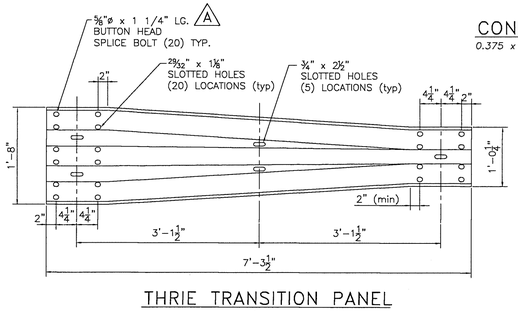


CONNECTION PLATE

0.375 x 20.000 x 27.000 (A709 gr 36)

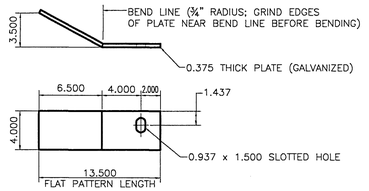


SECTION B–B



THRIE TRANSITION PANEL

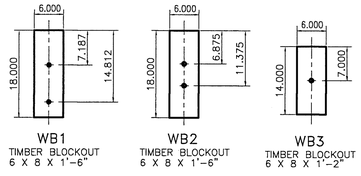
10 GAUGE (AASHTO M180 B2)



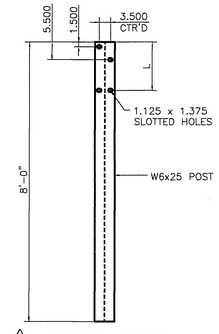
DEFLECTOR PLATE

0.375 x 4.000 x 13.500 (A709 gr 36)

RIGHT HAND APPROACH SHOWN – LEFT HAND BENT OPPOSITE



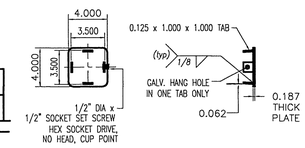
WOOD BLOCK DETAILS



A STEEL POST

STEEL POST CHART

No.	L
#1	1'-3.250"
#2	1'-3.000"
#3	1'-2.687"
#4	1'-2.375"

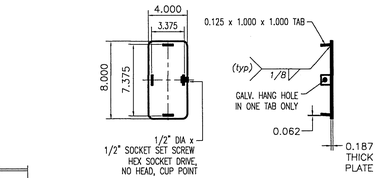


END CAP (4x4)

0.187 x 4.000 x 4.000 (A709 gr 36)

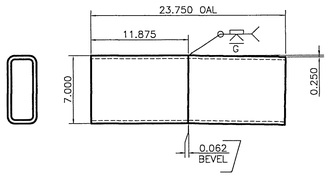
NOTES:

1. PAYMENT FOR GUARDRAIL APPROACH SECTION – GALVANIZED 2 RAIL, SHALL INCLUDE THE TERMINAL CONNECTOR, THE CONNECTION PLATE, THE DEFLECTOR PLATE, RAIL, POSTS, BLOCKS AND ATTACHMENT HARDWARE.
2. ALL APPROACH RAIL SPLICES SHALL BE LAPPED IN THE DIRECTION OF TRAFFIC FLOW.
3. TUBE AND STEEL POST MATERIALS, DIMENSION SIZES AND NOTES SHALL BE THE SAME AS THOSE OF THE BRIDGE RAIL UNLESS OTHERWISE NOTED.
4. APPROACH RAIL BOLTS SHALL BE ASTM A307 GRADE A AND NUTS SHALL BE AASHTO M291 (ASTM 563 GRADE A OR BETTER (GALVANIZED). WASHERS SHALL BE ASTM F844.
5. WELD TOP SPLICE BAR TO FIT BEND. USE COMPLETE PENETRATION WELD (B–U2).



END CAP (8x4)

0.187 x 4.000 x 8.000 (A709 gr 36)



ANGLED SPLICE DETAIL

HSS 7 x 3 x 3/8 – FOR UPPER RAIL SPLICE

SEE BRIDGE RAIL SHEET FOR DETAIL ON LOWER RAIL SPLICE TUBE

BILL OF MATERIAL

Qty	mk	Description	Spec.
4 EA		ITEM 621.72 GUARDRAIL APPROACH SECTION, GALVANIZED, 2 RAIL BOX BEAM	
4	01	W6x25 APPROACH POST - #1 x 8'-0" OAL (GALV)	A709 gr 50
4	02	W6x25 APPROACH POST - #2 x 8'-0" OAL (GALV)	A709 gr 50
4	03	W6x25 APPROACH POST - #3 x 8'-0" OAL (GALV)	A709 gr 50
4	04	W6x25 APPROACH POST - #4 x 8'-0" OAL (GALV)	A709 gr 50
4		UPPER RAIL APPROACH TUBE HSS 8 x 4 x 5/16 x 9'-4.000" w/ 3.500 SLOTS FOR 4" EXP GAP (GALV)	A500 gr B
4		LOWER RAIL APPROACH TUBE HSS 4 x 4 x 1/4 x 9'-4.000" w/ 3.500 SLOTS FOR 4" EXP GAP (GALV)	A500 gr B
4		CONNECTION PLATE PL 0.375" x 20.000" x 27.000" (GALV)	A709 gr 36
2		DEFLECTOR PLATE (RIGHT) PL 0.375 x 4.000 x 13.375 (GALV)	A709 gr 36
2		DEFLECTOR PLATE (LEFT) PL 0.375 x 4.000 x 13.375 (GALV)	A709 gr 36
4		END CAP FOR 8x4 TUBE 0.187 THICK PLATE 8.000 x 4.000 w/ WELDED TABS (GALV)	A709 gr 36
4		END CAP FOR 4x4 TUBE 0.187 THICK PLATE 4.000 x 4.000 w/ WELDED TABS (GALV)	A709 gr 36
4		(ANGLED) SPLICE TUBE (EXPANSION) FOR 8x4 UPPER RAIL HSS 7 x 3 x 3/8 x 1'-11.750" OAL (GALV)	A500 gr B
4		SPLICE TUBE (EXPANSION) FOR 4x4 LOWER RAIL HSS 3 x 3 x 5/16 x 1'-11.750" OAL (GALV)	A500 gr B
32		WOOD POST (WP1) 6 x 8 x 7'-0"	TIMBER
32		WOOD BLOCKOUT (WB1) 6 x 8 x 1'-6"	TIMBER
4		WOOD POST (WP2) 6 x 8 x 7'-0"	TIMBER
4		WOOD BLOCKOUT (WB2) 6 x 8 x 1'-6"	TIMBER
4		WOOD POST(WP3) 6 x 8 x 7'-0"	TIMBER
4		WOOD BLOCKOUT (WB3) 6 x 8 x 1'-2"	TIMBER
4		THRIE FLAT LIP BRIDGE SHOE (MODIFIED) 10 GA. GALV	aashto M180 B2
4		THRIE TRANSITION PANEL 6'-3" / 3'-1 1/2" 10 GA. GALV.	aashto M180 B2
8		THRIE PANEL 12'-6" / 1'-6 3/4" 12 GA. GALV.	aashto M180 A2
92		ROUND HEAD POST BOLT slot or wrench head - no shoulder 3/4" DIA x 6" LG. (GLV) w/ LOCK NUT & FLAT WASHER	A449
4		ROUND HEAD POST BOLT slot or wrench head - no shoulder 3/4" DIA x 2" LG. (GLV) w/ HEX NUT	A449
8		ROUND HEAD POST BOLT - oval shoulder 5/8" DIA x 1'-8" LG. (GALV) w/ DBL RECESS NUT, FLAT WASHER	A307
68		ROUND HEAD POST BOLT - oval shoulder 5/8" DIA x 1'-6" LG. (GALV) w/ DBL RECESS NUT, FLAT WASHER	A307
32		HEX HEAD BOLT 5/8 x 1-3/4" (GALV) w/ FLAT WASHER	A325
128		PANEL SPLICE BOLT 5/8 x 1-1/4" (GALV) w/ DOUBLE RECESSED NUT	A307
76		RECTANGULAR PLATE WASHER 0.187 x 1.750 x 3.000 (GALV)	A709 gr 36
32		SPACER PIPE - GALVANIZED 3/4" SCH. 40 x 1/2" LONG (GLV)	A53 gr B

Vermont Agency of Transportation

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CK'D BY FDB OK'D BY HIS

May 29, 2015

RESUBMIT No **Approved**

BY Carolyn Carlson DATE 6/2/2015

HIGHWAY SAFETY CORP

GLASTONBURY, CT

860–633–9445

ITEM 621.72 GUARDRAIL APPROACH SECTION, GALVANIZED 2 RAIL BOX BEAM (S-3608)

BRF 024–1(37)

VT ROUTE 12 – BRIDGE 77

TOWN OF MIDDLESEX, WASHINGTON COUNTY VT

GENERAL CONTRACTOR

SUB CONTRACTOR LAFAYETTE

AISC CERTIFIED FABRICATOR

HSC JOB NO. 2048

SHEET NO. 3 of 3

DRAWN	CHECKED	DATE	SCALE	SIZE
PAR		05–07–15	NONE	D